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U.S. Army
1942
WAR DEPARTMENT

U.S. Army
TECHNICAL MANUAL

**MAINTENANCE POLICIES,
PUBLICATIONS, AND FORMS**

June 8, 1942



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TECHNICAL MANUAL
No. 1-650

WAR DEPARTMENT,
WASHINGTON, June 8, 1942.

MAINTENANCE POLICIES, PUBLICATIONS, AND FORMS

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SECTION I

GENERAL

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1. Purpose.—*a.* The information contained in this manual is generally applicable to Army Air Forces personnel engaged in the maintenance of military aircraft, and in particular to the organization or base engineering officer and the airplane mechanic. Familiarity with publications, forms, and policies is considered an essential pre-

requisite to efficient aircraft maintenance and contributes toward standardization of accepted practices.

b. This manual does not supersede or replace instructions in the publications from which it was compiled, that is, Army Air Forces regulations, Air Corps circulars, and Air Corps technical orders. It is intended for training purposes only. In the event of any conflicting information or instructions, the Army Air Forces regulations or Air Corps circular or technical order concerned will be followed.

2. Functions of engineering officers.—The functions of the Army Air Forces engineering officer are subject to current technical and administrative regulations. In general, such functions are as follows:

a. To regulate and control the engineering activities of depots, air bases, and organizations.

b. To maintain the standards of construction, workmanship, etc., as prescribed in existing regulations.

c. To maintain all engineering and maintenance inspection records.

d. To inspect the various departments and sections within his jurisdiction at frequent intervals.

e. To instruct officers, enlisted personnel and civilian employees under his jurisdiction in the prescribed standards of construction, workmanship, and functions of the activity concerned.

3. Duties of airplane mechanic (crew chief).—The airplane mechanic is charged with the responsibility of performing technical inspections and maintenance of aircraft in accordance with policies and instructions prescribed in Army Air Forces regulations, Air Corps circulars and technical orders, etc., and by organization engineering officers. His duties in general are as follows:

a. Service, inspect, and maintain assigned aircraft and aircraft equipment.

b. Maintain the prescribed aircraft maintenance inspection records and reports.

c. Instruct mechanics (assistants) under his jurisdiction in the prescribed standards of workmanship, inspection, and maintenance.

d. Assist the pilot in becoming familiar with pertinent data on the status and functioning of assigned aircraft.

e. Submit recommendations with respect to improving the efficiency of maintenance and inspection.

f. When required, to accompany the aircraft on flights and if designated by the pilot, to service, inspect, and maintain the aircraft while away from the home station.

SECTION II

GENERAL MAINTENANCE POLICIES

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4. Echelons of maintenance.—(See A. C. Technical Order 00-25-4.) There are four echelons of maintenance for the complete airplane. An echelon may be defined as one part or a division. Thus, one part of aircraft maintenance is designated first echelon of maintenance, to which definite functions and objectives are assigned. Other parts called second, third, and fourth echelons perform other maintenance functions and objectives.

a. First echelon of maintenance.—(1) First echelon of maintenance of the complete airplane is a function of all Army Air Forces units operating or maintaining aircraft. All essential tools and other equipment provided for the performance of first echelon of maintenance are transportable by air.

(2) The functions of first echelon of maintenance include—

(a) Cleaning of the airplane and equipment, performed as a preventive measure against wear, fire, etc., and as a preliminary to inspections.

(b) Servicing of airplanes and airplane equipment.

(c) Performance of periodic inspections.

(d) Adjustments, repairs, and replacements as may be accomplished by the use of hand tools and other mobile equipment authorized for issue to the unit.

(e) Engine change, when the ground echelon of the organization concerned is at the site, except that second echelon delivers the engine and hoisting equipment to the site as needed.

b. Second echelon of maintenance.—(1) Units charged with second echelon of maintenance require specialized mechanics. This echelon of maintenance embraces repairs and replacements requiring mobile machinery and other equipment of such weight and bulk that ground means of transportation are necessary.

(2) Second echelon of maintenance includes—

(a) Field repairs and salvage.

(b) Removal and replacement of unit assemblies.

(c) Fabrication of minor parts.

(d) Minor repairs to aircraft structures and equipment.

(3) Normally this echelon embraces repairs which can be accomplished within a limited time period as determined by the situation prevailing.

c. Third echelon of maintenance.—(1) Third echelon of maintenance is a function of subdepots.

(2) This echelon of maintenance includes—

(a) Repairs and replacements requiring fixed machinery and tools, parts, and equipment not carried by operating units or matériel squadrons in the field.

(b) Recovery, reclamation, or repair and return to service of aircraft incapable of flight when, due to location or other causes, this action is more economically accomplished by this echelon than by second echelon facilities.

(c) Operations normally performed by air depots which may be authorized and for which the necessary personnel and facilities are available, including repairs requiring temporary withdrawal of aircraft from tactical use but not warranting or necessitating return to the air depot.

d. Fourth echelon of maintenance.—(1) Fourth echelon of maintenance is a function of the depot and depot group.

(2) This echelon of maintenance includes—

(a) All operations necessary completely to restore worn or damaged aircraft to a condition of tactical serviceability.

(b) Periodic major overhaul of engines, unit assemblies, and auxiliary equipment.

(c) Fabrication of such parts as may be required in an emergency or as directed in technical instructions.

(d) Accomplishment of technical compliance changes as directed.

(e) Replacement, repair, and service checking of auxiliary equipment.

(f) Recovery, reclamation, or repair and return to service of aircraft incapable of flight.

5. Depot inspection and repair policies.—(See A. C. Technical Orders 00-25-4 and 00-25-8.) *a.* Aircraft are not grounded for return to repair establishments because of fair wear and tear merely on the basis of the expiration of predetermined period of age or service, but only for good and sufficient reasons indicated by the general condition of the equipment.

b. Maximum periods of service between repair operations depend upon the efficiency of station and organization maintenance. The

prescribed system of inspection and maintenance affords a constant check on the operating condition of each aircraft, and primary responsibility for determination of operating conditions rests within the using organization.

c. Under normal operating conditions, either the designated amount of aircraft flying time or elapsed time regardless of the amount of flying time (Technical Order 00-25-4) may be attained with safety before depot inspection and repair is necessary, and in many individual cases may be substantially exceeded. Tentative schedules for the inspection and repair of aircraft are arranged by the depots with the stations in their respective control areas using the designated flying time and elapsed time as a guide, but the actual physical condition of each aircraft as revealed by inspection will be the controlling factor which determines whether it is to be given depot inspection and repair before, at, or after the period designated. Recommendations are submitted by depots to the Commanding General, Air Service Command, for changing the designated periods whenever experience and observation indicate the need for change.

d. Whenever the condition of an aircraft is considered such that depot inspection and repair are necessary for continued safe operation, final determination as to when it will be withdrawn from service and forwarded to the depot or subdepot is made only by arrangement with the depot concerned. The engineering officer of the depot (or subdepot, if so authorized), upon receipt of the aircraft, determines the extent of work in addition to that prescribed by technical orders and other specific instructions that is required to place the aircraft in serviceable condition. This determination is made by an inspection, regardless of the amount of flying time since the last depot inspection and repair. This inspection is made by disassembling the equipment only to the extent necessary to determine its condition and the amount of repairs required, unless as the result of a wreck or other accident the necessity for complete disassembly is obvious. Responsibility for the serviceability for tactical use of aircraft when released by a depot rests with the depot.

e. When airplanes are ordered into depots for any special work, only such additional repairs are normally accomplished as are necessary to place the airplane in satisfactory condition for tactical operation. Compliance with technical orders requiring accomplishment "as soon as possible" is necessary. In cases where additional work is required which will abnormally delay the return of the aircraft

to its home station, the depot arranges with the home station for its withdrawal from service and retention at the depot or its temporary return to the home station, as circumstances may warrant.

f. Service activities forward to the depot with the airplane all parts furnished them for compliance with technical orders which are to be complied with while the airplane is at the depot.

g. Engines are normally removed for overhaul at the expiration of the designated flying time for engines (Technical Order 00-25-4), except that additional flying time not to exceed 20 percent of the number of hours listed may be authorized when the condition of the engine warrants. This authorization and final determination of the condition and serviceability of an engine is a responsibility of the engineering officer of the respective base or operating organization, consideration being given in addition to actual inspection of engines, to any known characteristics peculiar to the equipment, and to reports submitted by pilots on previous flights.

h. Normally, when airplanes are received at a depot for depot inspection and repair, and the engines installed therein have been flown more than 80 percent of the specified overhaul period, the engines are removed and overhauled. If the engines in question have been flown less than 80 percent of their specified overhaul period, they are ordinarily given such minor repairs as may be necessary and returned to service. Variation from this procedure is a matter for the administration of depot engineering officers after considering in each case the general condition of the engine, its inherent characteristics, and the nature of the service to which it has been subjected.

i. When an aircraft is received or transferred to another station the provisions of Technical Order 00-25-8 must be complied with.

6. Safeguarding military information.—(See A. A. F. Memorandum 41-1.) Officers, enlisted personnel, and civilian employees must avoid disclosure of any information concerning official matters, to any person outside of official circles. Official matters, whether classified (secret, confidential, or restricted) or unclassified, should not be discussed at any time except when necessary in the transaction of official business. Discussion of official matters in public places, or in the presence of individuals not officially concerned with those matters, is improper and may result in the unintentional disclosure of important information.

7. Fire prevention.—(See A. C. Circular 115-2.) In order to minimize the fire hazard in technical buildings at Army Air Forces activities, the following rules will be observed:

a. Airplanes will not be serviced with fuel while they are stored in hangars. When weather conditions, temperatures, dust, etc., render it advisable to do so, they may be serviced with oil while stored in the hangar. When this is done, care will be exercised to see that oil is not spilled on the floors or allowed to accumulate in drip pans or other containers.

b. Fuel trucks will not be stored overnight in hangars, when other storage facilities are available.

c. Work which requires the use of equipment with an open flame will be restricted to isolated locations where there is an adequate circulation of air and will not be performed near inflammable materials unless proper precautions are taken to prevent ignition. When possible, inflammable parts attached to, or near equipment requiring welding, cutting, or brazing are removed. If it is not considered practicable to remove these parts, a suitable shield of asbestos or other effective heat-resisting material is used for protection. A fire guard equipped with a fire extinguisher will also be stationed nearby.

d. Unless otherwise directed by competent authority an airplane being repaired in a manner requiring the use of an open flame will be stationed outside the hangar or near the door, so that it may be quickly moved to the outside of the hangar in case of fire. It will also be stationed a safe distance from other aircraft, or inflammable equipment. If welding is performed in close proximity to the fuel tank, the tank will be drained and filled with water.

e. When repairing a tank or cylinder, do not apply heat if it contains an explosive or inflammable substance, or if it has previously contained an inflammable or explosive substance unless all such substance and its latent fumes have been completely removed and the container is well vented.

f. Drums or other receptacles containing fuel, oil, dope, paints, varnishes, etc., will not be stored in hangars or other buildings where aircraft or inflammable aircraft parts are stored, except that small quantities of lubricating grease of comparatively low volatility, for immediate consumption, may be kept in hangars, provided they are placed in steel lockers or similar containers.

g. Do not stack cowlings and other impedimenta in front of fire fighting apparatus and do not hang clothing on fire extinguishers.

h. Oily rags, waste, trash, and other materials which might induce spontaneous combustion must be kept in covered metal receptacles and emptied at least once daily, and always prior to closing the hangar or building.

i. Smoking or striking matches is prohibited within 50 feet of aircraft or hangars, shops or other buildings in which highly inflam-

mable materials are in use or storage. Signs containing instructions to this effect must be posted in conspicuous locations in such buildings.

j. Switches that arc, or motors that spark at the commutator or elsewhere, must not be used in fuel storage buildings or other locations where inflammable gases or mists may exist.

k. Machine bearings should be kept well lubricated to prevent overheating, and drip pans and cups should be emptied as frequently as is required to remove excessive amounts of lubricants. Machine belts should never be used in confined locations if inflammable gases or mists are prevalent.

l. Use only vapor-tight extension lamps when working with or near highly inflammable fluids or gases.

m. Piping containing liquid fuels should be adequately protected from possible breakage by vibration or objects falling on or otherwise striking them. Rubber connections in fuel lines should be used only when necessary. Shut-off valves should be installed at a safe distance from liquid fuel burners to provide a means of shutting off the supply of fuel in the event of a failure in the system.

n. Cleaning of airplanes and other equipment with inflammable cleaning solvents may be accomplished only under the supervision of a commissioned officer, crew chief, or qualified civilian foreman.

(1) Adequate fire fighting equipment will be readily available while cleaning.

(2) Inflammable solvents will be stored in small, safety-type containers, and covered when not in use. Safety-type containers should be painted red and have the name of the cleaning material on each container.

(3) All sources of fire hazards, such as smoking, open flames, or the operation of any electrical equipment that may produce sparks must be prohibited in the vicinity of cleaning, and warning signs must be conspicuously posted during such cleaning operations.

(4) The wearing of shoes which have exposed nail heads or iron cleats that may result in sparking on hard surfaces must be avoided.

(5) All electrical parts must be thoroughly dried prior to use.

(6) Storage batteries, except those employing integral shielding, should be removed from an airplane prior to cleaning. Where integrally shielded batteries are employed it is not necessary to remove the battery; however, the battery cables must be disconnected and the cable terminals taped to prevent accidental contact with the battery terminals. In the event the shielded battery is located in an enclosed compartment within the airplane, the compartment and the conduit

leading to the battery should be thoroughly ventilated with compressed air before the battery is reconnected to the electrical unit.

8. Safety policies.—(See A. C. Circular 130-2.) *a. General.*—The following general safety rules are for the information and guidance of all concerned in guarding against injuries to personnel engaged in shops, warehouses, and related occupations.

b. Safety fundamentals.—The following safety precautions and instructions are applicable generally to all personnel:

(1) *Warning signs and signals.*—Do not disregard warning signs or signals as they were adopted for your safety.

(2) *Attention to work.*—Pay strict attention to the work in which you are engaged. If, while operating a power-driven machine, it becomes necessary to engage in conversation or to leave the machine and a hazard is created thereby, stop the machine.

(3) *Practical jokes.*—Do not engage in practical jokes during working hours.

(4) *Hazardous short-cuts.*—Hazardous short-cuts should be avoided when a safer method is available.

(5) *Recklessness.*—Operate all vehicles and machinery at a safe rate of speed, whether power or manually driven.

(6) *Caution for lifting.*—Avoid heavy lifting with the knees straight and rigid. Strains may be prevented by bending the knees. Ascertain your physical capabilities before attempting a lift and in all cases be certain of your footing.

(7) *Tampering.*—Do not tamper with unfamiliar machinery or equipment. Allow repairs and alterations to be performed by authorized personnel.

(8) *Falling objects.*—Do not place tools or material on overhead platforms, scaffolds, walkways, etc., unless they are properly secured.

(9) *Orderliness.*—Do not obstruct aisles, passageways, etc., with materials, tools, or other equipment.

(10) *Dangerous projections.*—Do not allow objects containing projecting screws, nails, etc., to remain in places where they might cause injury.

(11) *Open holes, ditches, etc.*—Provide adequate warning signs or lights for manholes, ditches, etc., in locations that may prove hazardous to others.

(12) *Submitting safety recommendations.*—Submit to the person in charge any recommendation you may consider necessary to increase personal safety.

(13) *Cooperation for safe conditions.*—Cooperate with the person in charge by bringing current unsafe practices to his attention.

c. Personal protective equipment.—The following equipment should be used whenever work of the nature cited after each item is performed, and in all other cases where its use will prevent immediate or ultimate injurious effects to personnel.

(1) *Laboratory aprons.*—These should be worn when handling storage batteries and in painting and doping work. To reduce the fire hazard of aprons to which paints, dope, etc., has adhered, the aprons should be removed prior to leaving the shop during rest periods, lunch hours, etc.

(2) *Gloves, sandblast, steel armored palms, pigskin.*—This equipment is necessary in sandblasting.

(3) *Rubber gloves.*—These are worn when handling acids or caustics, and when mixing luminous compounds.

(4) *Grinding goggles.*—Use goggles when grinding, chipping, or performing similar work wherein the eyes are subjected to injury from foreign particles.

(5) *Welding goggles (gas welding).*—This equipment is used to protect the eyes from sparks, intense visible light, or ultraviolet and infrared rays when welding, cutting, etc., is performed.

(6) *Welding shields or helmets (electric welding).*—These serve to protect the face and eyes when arc welding.

(7) *Welding gloves.*—Use gloves when welding, torch cutting, handling hot articles, etc.

(8) *Respirators.*—Use respirators when operating dope or paint spraying equipment, or when working in a confined location where dope or paint spraying equipment is operated. Prior to reissuance, goggles and respirators should be sterilized. Respirators and goggles are disassembled for sterilizing and the filtering substances are replaced before reissue. The following sterilizing methods are recommended:

(a) Immersion for 10 minutes in a solution of formalin prepared by dissolving one part of 40 percent formaldehyde in nine parts of water.

(b) Subjection to a moist atmosphere of antiseptic gas, preferably formaldehyde, for a period of 10 minutes.

(c) Cleansing of all parts with a cloth saturated with a 2 percent solution of cresol or lysol.

d. Ventilation.—Where sufficient fresh air cannot be naturally provided, and where dust, fumes, paint spray, etc., are usually present, suitable ventilating equipment should be provided. Where gas or oil heating is used, the heating appliances should be adequately vented to the atmosphere.

e. Lighting.—Adequate artificial lighting should be provided when sufficient natural lighting cannot be obtained.

f. Fire prevention.—See paragraph 7.

g. Machine shop.—(1) *Machine arrangement.*—Machines should be so arranged that there is ample room for operators and stock in order that the operator of any one machine is not required to work where endangered by the operation of adjacent equipment.

(2) *Qualified operators.*—Only qualified personnel should operate machinery without supervision.

(3) *Clothing.*—Loose or torn clothing, or long flowing ties, should never be worn while operating machines.

(4) *Adjustment.*—If a machine is in operation, do not attempt to adjust or reset the article being machined. While absorbed in such adjustment, the position of the cutter or other dangerous parts may be overlooked.

(5) *Making driving-power controls safe.*—While a machine is undergoing repairs, being cleaned or oiled, the driving-power control should be secured in the “off” position to prevent accidental operation.

(6) *Removal of chips and shavings.*—Chips, shavings, etc., should not be removed by hand while a machine is in operation. The machine should be stopped if practicable, or a suitable brush or other article used for such purpose.

(7) *Hoists for heavy objects.*—If the lifting by hand of heavy objects is obviously precarious, a hoist should be used. The tendency to lift heavy chucks, faceplates, stock, or parts of machines without adequate preparation or assistance is a common fault that results in many injuries.

(8) *Installation and removal of faceplates, chucks, etc.*—Avoid the use of operating power to install or remove faceplates, chucks, etc. Perform these operations by hand.

(9) *Chuck wrenches.*—Do not place a chuck wrench in the chuck on any power-driven machine, unless it is actually being used.

(10) *Drill presses, boring machines, etc.*—To avoid the hazard of the tool grabbing and spinning the stock in a drill press, boring machine, etc., clamp the stock securely to the table of the machine. If the stock loosens and spins, stop the machine. Never try to forestall this action by hand.

(11) *Power cut-off saws (metal).*—Never operate a saw until the work is securely clamped in the vice and a suitable support is provided for the part to be removed.

(12) *Planers and shapers (metal)*.—Ascertain that the stock is safely secured before starting the cut and, when practicable, check the cut by hand, before starting the power cutting.

(13) *Circular saws (wood)*.—(a) Saws should be kept sharp, and frequently inspected for broken teeth or other defects. The manufacturer's instructions should be consulted for saw sharpening, setting, gumming, etc.

(b) The work guide must be adjusted parallel to the saw. A "kick-back" may be caused by misalignment between the saw and the guide. Use a low gage (thin) saw for thin material.

(c) When sawing long stock, obtain assistance or provide a support for the stock as it leaves the saw table.

(d) Use a push stick with a notch cut in one end to push narrow strips through the saw. Never use the hands near the saw for this purpose.

(e) Do not use a rip saw for crosscutting. While a crosscut saw may be used for ripping, a rip saw is unsafe for crosscutting.

(14) *Band saws*.—(a) Do not use a wide blade to cut a circle of small radius or a light blade for heavy stock.

(b) Saw blades should be spliced by experienced personnel only.

(15) *Manually fed planers and jointers (wood)*.—(a) Use a push block of hard wood provided with a handle on the top (similar to that of a wood plane) and a shoulder or cleat on the bottom rear end, to push short pieces of stock through the machine.

(b) Make frequent inspections for defects in cutter blades. Do not use defective blades.

(16) *Swing saw*.—(a) The material table for swing saws should be so arranged that the operator is not stationed in front of the saw. If the saw is mounted to the left of the frame, the material should be fed from the right, and vice versa.

(b) The counterweight should possess sufficient momentum to return the saw to a safe position without rebound when released. If a cable arrangement is used for the counterweight, the cable should be subjected to frequent inspections.

(17) *Grinders*.—(a) Unmounted wheels should be carefully handled to prevent cracking.

(b) The bearing surfaces of the wheel flanges and spindles should be free from foreign substances or projections to prevent misalignment or uneven pressure upon the wheels. Heavy paper should be placed between the flanges and the wheel.

(c) Spindle nuts should not be excessively tightened, as the pressure may break the wheels.

(d) Following installation, new wheels should be given a test run for at least 1 minute at maximum rpm during which time the operator and all observers should remain at a safe distance.

(e) Wheels should occasionally be checked for trueness and balance, and those which cannot be trued or balanced through normal adjusting or dressing should not be used.

(f) Work rests should be adjusted so that the clearance between the rest and the wheel does not exceed $\frac{1}{8}$ inch.

(g) Avoid grinding on the side of a wheel unless it is specifically designed for such work, as side pressure may break the wheel. If such grinding is necessary, do not use excessive pressure.

(h) The manufacturer's instructions should be consulted and complied with in the care and use of each type of wheel.

(18) *Cutting oils and compounds.*—Lard oil and similar material which is used for cooling cutting tools may provide a source of skin infections if proper precautions are not observed. Compliance with the following rules will tend to eliminate such infections.

(a) Do not use cutting oils or compounds to remove heavy grease, etc., from the hands, or arms, as chips or shavings contained in the oil may result in cuts or scratches.

(b) When finished with the work, remove cutting oil, etc., from the hands and arms by thoroughly washing with warm water and soap.

(19) *Belt shifting.*—Shifting belts by hand should be avoided if possible as this practice results in many injuries from lacing cuts, and also serious injuries from having hands caught between belts and pulleys.

(20) *Guards for machinery and other equipment.*—Suitable guards should be provided and used as follows:

(a) Swinging knife guard for planers and jointers.

(b) Swinging saw guard for power crosscut and rip saws.

(c) Wheel guards for the upper and lower wheels of bandsaws.

(d) Hoods for grinder wheels.

(e) Hoods for swing saw blades.

(f) Guards or railing for dangerous moving parts such as wheels, gears, sprockets, pulleys, belts, etc., that are located within 6 feet of the floor. Lathe chucks and similar parts that require constant manipulation by the operator are excepted.

(g) Guards or railing for all high-voltage electrical switchboards, contacts, conductors, generators, etc., that are exposed to contact.

(h) Guards or railing for all power-driven projections, such as rotating flanges, couplings, setscrews, keys, etc.

(21) *Hand tools*.—Cold chisels, blacksmith cutters, hammers, sledges, drift pins, etc., should not be used when the heads are “mush-roomed” (spread and split). Hammers, sledges, etc., should not be used when the handles are defective or loose. Handles should be used on all tanged tools, such as files, wood chisels, soldering irons, etc. In lathe filing particularly, it is important that tangs be firmly embedded in suitable handles to avoid injury.

h. Hoists.—(1) *Hand-operated hoists*.—(a) Broken or otherwise defective blocks should not be used.

(b) Block hooks should be adjusted so that they bear the load on the inside centers.

(c). Blocks should not be attached to rods, beams, etc., in a manner that will permit the blocks to slip when the load is applied. If danger of slipping exists, the blocks should be secured before applying the load.

(d) Periodic inspections should be made of suspension points of supporting trolleys, beams, etc., and of the mechanism of chain hoists, to insure safety in operation. Positive stops should be provided at the end of tracks or rails on which traveling hoists are suspended.

(e) Severe side pulls should be avoided on monorail systems, as such strains may spread or break the trolley frame, or twist and loosen the rail supports.

(f) The maximum weight capacity of hoists and beams should not be exceeded. This capacity should be stenciled in plain letters on the equipment for the information of the operating personnel.

(2) *Slings, hoisting lines, brakes, and other mechanisms*.—(a) Slings should possess sufficient strength to support the load safely.

(b) Hoisting cable and rope should possess sufficient strength to support all loads safely and should be frequently inspected for defects. Care should be exercised to avoid kinking wire cable. In no case should any attempt be made to guide a cable or rope onto a winding drum by hand.

(c) To avoid injury to the hands, care should be exercised in handling stranded wire cable.

(d) Brakes and other mechanisms should be frequently inspected, tested, and properly adjusted by qualified personnel.

(3) *General precautions*.—(a) To avoid having fingers or arms caught between hoisting lines and blocks, keep the hands away from such articles while loads are being lifted or pulled. If necessary to guide objects, use guide ropes.

(b) Do not attempt to lift or carry a load over any person.

(c) Personnel should avoid riding on loads which are being lifted or carried by hoists.

(d) When working with a load, or guiding it into place, be sure that no one is in a position to get injured when the load is raised, swung, carried, set down, or dropped.

i. *Electrical equipment.*—The following safety rules apply to electrical equipment, including wires, cables, and other conductors:

(1) *Clothing.*—Personnel required to work on high-voltage circuits and equipment are cautioned not to wear loose clothing or defective shoes. It is advisable to have the sleeves rolled down.

(2) *Insulated tools.*—Tools having well insulated handles should be used if possible.

(3) *Working in pairs.*—When the work is of a hazardous nature those employed in it should work in pairs. This applies to working on overhead high-voltage lines, working outside at night, working outside in wet weather, and similar hazardous conditions.

(4) *"Men at work" signs.*—When work is performed on an electric circuit, the switch should be secured in the "off" position and a warning sign placed on the switch to notify others that men are at work on the line.

(5) *Dead lines.*—Never assume that a line is dead; be sure.

(6) *Extension cords.*—Twisted lamp cord should not be used for portable extension cords. Use cord designed for this purpose.

(7) *Substitutions for fuses.*—Do not place wire or other material across fuse clips as a substitute for fuses, and do not insert pennies, etc., behind fuse plugs to prevent them from blowing out.

(8) *Tampering.*—Do not tamper with electric circuits or other electrical equipment.

(9) *Repairs and installations.*—Electrical repairs and installations must be performed by authorized personnel only.

(10) *Inspections.*—To prevent injuries and fire hazards, frequent inspections of electric wiring and other appliances should be made by competent personnel.

j. *Compressed air.*—(1) *Equipment.*—Deteriorated or otherwise defective hose should not be used for compressed air. Compressed air nozzles, pipe, pipe fittings, tanks, etc., should be maintained in a safe working condition.

(2) *Precautions in using.*—Never direct compressed air against the clothing or body for the cooling effect, removal of dust, dirt, etc., as there is always the possibility of injury by foreign particles forced out with the air. Exercise care when using compressed air to blow dirt, chips, and other foreign substances from machines, benches, etc., as flying particles may result in injury.

(3) *Precautions against playing pranks.*—Do not play pranks with compressed air. Many painful injuries and, in some cases, fatalities have been caused through thoughtless practical jokes with compressed air.

k. Welding equipment.—(1) *Oxygen and acetylene cylinders.*—(a) Cylinders should be handled carefully to avoid dropping them, or to prevent them from receiving sudden shocks or blows, and should never be lifted with slings or electromagnets. Valve caps should be installed when cylinders are handled, unless handling is incident to the use of the gas.

(b) No special provision is required for storing cylinders provided they are protected from dampness and excessive increases in temperature. Segregate empty cylinders from the full ones. Acetylene tanks should be stored in an upright position.

(2) *Operators.*—No one should be allowed to operate welding equipment, unless he is thoroughly familiar with its use and all of the hazards involved.

(3) *Pressure regulating.*—Do not stand in front of the gages when regulating the pressure. Stand to one side to avoid injury in the event the regulator glass breaks.

(4) *Fumes and gases generated by welding, etc.*—(a) Avoid breathing the fumes of burning paint, as they are usually laden with particles of lead or zinc, which are poisonous. This also applies to fumes generated during brazing, and the welding, cutting, etc., of brass, zinc, and galvanized articles.

(b) When using a welding torch in an inadequately ventilated location, the operator may be overcome by the gases generated or by the reduction of oxygen in the air by the torch flame. Therefore, such work should not be done unless adequate forced ventilation is provided or the operator is supplied with a suitable signaling device and an assistant is stationed nearby to render aid when necessary. This also applies to electric welding.

(5) *Handling the welding torch.*—(a) Confine the torch flame to the field of vision and exercise care in directing the flame to avoid an accidental fire or personal injury.

(b) Close both valves on the torch immediately after backfiring occurs; first the oxygen then the acetylene valve. If the hose bursts, or escaping gas is ignited at the regulator or tank at any other time, immediately close the valve at the tank.

(c) Do not light the torch with a match if it can be avoided. A lighter, gas jet, or similar means must be employed, when available. If it is necessary to use a match, light it and place it upon a non-inflammable substance, and then ignite the torch.

(6) *Oiling of oxygen equipment.*—Under no circumstances should gages, regulators, or other oxygen equipment be lubricated or exposed to oil.

(7) *Injuries from falling parts.*—Exercise care when torch cutting sheets, bars, etc., that the part cut off does not fall on anyone.

(8) *Injuries from hot metal.*—Do not place hot metal where it may cause physical injury. A suitable sign reading “Hot metal” is recommended as a warning.

l. Acids and caustics.—(1) *Common injuries.*—Several common injuries resulting from acids and caustics are—

(a) Burns through direct contact with the skin or clothing.

(b) Poisoning, when taken internally, or through inhaling the fumes.

(c) Burns resulting from explosions through improper mixing, handling, or storage.

(2) *General precautions.*—(a) A bulb-operated siphon, pump, or tilting device should be used for withdrawing acid from large containers. The use of a siphon or pump is preferable and is less hazardous than the use of a tilting device.

(b) Never pour water directly into an acid solution; pour the acid solution into the water and thus avoid splattering.

(c) When removing stoppers from containers of liquid caustics and acids, exercise care to avoid burns. The container may possess an internal pressure sufficient to force some of the liquid out when the stopper is removed, especially if the liquid is warm and the container is full.

m. Floors.—(1) *General.*—Floors should be free from hazards such as holes, loose boards, splinters, loose or raised joints, and other defects.

(a) Nails, bolts, studs, pins, etc., projecting from the floor in a place where they create a hazard, should be removed or adequately guarded.

(b) When possible, covers for drain openings, pipes, etc., should be installed flush with the floor.

(c) When it is necessary to install pipes, conduits, etc., horizontally above the floor level, they should be shielded with suitable guards placed over or on each side of the obstacle, and well tapered down to the floor.

(2) *Cleanliness.*—(a) Floors should be kept as clean as possible. Dirt and refuse that accumulates from various operations should be removed as often as practicable during the operation, and entirely removed on completion of the job or at the end of the day.

(b) Serious injury may be caused by slipping on oil, grease, water, etc., on floors. Particular effort should be made to prevent such hazards by removing the oil, grease, or water as soon as possible.

(c) To prevent the disturbance of dust when sweeping floors, damp sawdust or other suitable substances should be used.

(d) Floors should not be cleaned with gasoline or other inflammable materials.

(3) *Orderliness*.—(a) Aisles and passageways should be free from obstructions, if possible.

(b) Stock, finished or unfinished work, tools, etc., are not allowed to accumulate unnecessarily on the floors around machines.

n. Scaffolding and ladders.—(1) *Scaffolding*.—The lumber used for scaffolding should be of a satisfactory quality, free from knots and other defects.

(a) Upright members require adequate support to prevent sinking.

(b) Vigilance should be exercised to avoid overloading.

(c) Safe access should be provided by means of fixed or portable ladders. A ladder consisting of a single upright with cross bars is unsafe.

(d) Do not erect hazardous substitutions when the work involved requires a properly constructed scaffold. Stacked boxes, barrels, etc., are unsafe for such purposes.

(2) *Ladders*.—Inspect all ladders for sufficient strength and rigidity and provide a suitable means to prevent the legs from sinking into soft ground or slipping.

(a) Always place a straight ladder in such a way that it bears evenly on both sides at the upper as well as the lower end, and at an angle that will prevent it from slipping in any direction or overbalancing.

(b) When a stepladder is not used as a straight ladder, it should always be adjusted to, and locked in, its full "open" position. It should be upright and bear evenly on all four legs.

(c) When using a ladder in front of a door that opens toward the ladder, keep the door open or locked, or have someone guard the passage. This also applies to windows that may be opened and thereby cause accidents.

(d) Do not place a ladder against a window sash. Use a cross board at least 1 foot wider than the window and secure it properly to the upper end of the ladder.

(e) Face the ladder and use both hands for ascending and descending.

(f) Do not use hazardous substitutes such as boxes, crates, barrels, etc., in place of ladders, nor a ladder for work requiring a scaffold.

9. Disposal of damaged or condemned Army Air Forces property.—(See AR 20-35, AR 35-6640, and A. C. Circular 65-12.)

a. Accountable and responsible officers dispose of unserviceable Army Air Forces property in accordance with the provisions of A. C. Circular 65-12. The method of disposal depends to a great extent upon the circumstances which caused the property to become unserviceable. The following are some of the principal methods of disposal and circumstances involved:

(1) Articles which have become unserviceable through no fault or neglect of personnel, and which are economically reparable, are listed on W. D., A. C. Form No. 48 (Work Order) and sent to the air base repair shop or depot for repair. If the air base is not authorized or equipped to make the necessary repairs and the articles are not considered worth the cost of transportation to a depot, they are disposed of in the same manner as articles which are beyond economical repair.

(2) Articles which have become unserviceable through the possible fault or neglect of personnel are listed on W. D., A. G. O. Form No. 15 (Report of Survey). Wrecked airplanes are handled in this way.

(*a*) If the report of survey finds the articles are economically reparable, they are then listed on W. D., A. C. Form No. 48, and sent to an air base or depot for repair as explained in (1) above.

(*b*) If the report of survey finds the articles are beyond economical repair, they are sent to the Reclamation Department for reclamation of serviceable and reparable parts and salvage of the parts which are beyond economical repair.

(3) If articles have become unserviceable due to fair wear and tear in the service and there is no question of fault or neglect involved, or if they have been declared obsolete by proper authority, and contain no parts of reclaimable value to the Army Air Forces, they are listed on W. D., I. G. D. Form No. 1 (Inventory and Inspection Report), and submitted for the action of an inspector.

b. (1) Articles damaged beyond economical repair that are received for reclamation by a Reclamation Department are disposed of as follows:

(*a*) If the quantity of serviceable and reparable parts and assemblies that may be dismantled and reclaimed from the damaged property represents a value to the Army Air Forces sufficient to warrant this operation, the property is dismantled. Serviceable and reparable parts and assemblies are turned in to the Army Air Forces supply officer on W. D., A. C. Form No. 82 (Stores Credit). Parts and assemblies damaged beyond economical repair are turned over to the quartermaster salvage officer for disposal.

(b) If the quantity of serviceable and reparable parts and assemblies which may be reclaimed from the damaged property by dismantling does not represent a value to the Army Air Forces sufficient to warrant this operation the property is turned over to the quartermaster salvage officer for disposal.

(2) The reclamation officer maintains a record which includes both the reclaimed components and the unreclaimable residue. Such a record permits the final disposition of all the property turned in for reclamation to be traced.

10. Changes and modifications of aeronautical equipment.—

(See A. C. Technical Order 00-25-1.) *a.* No changes, alterations, modifications, or remodeling of aircraft, engines, or other aeronautical equipment which are likely to affect safety of flight or combat effectiveness will be made by any Army Air Forces activity without prior approval of the Commanding General, Army Air Forces. Depots and other Army Air Forces organizations are required to conform to applicable drawings, specifications, and existing orders. Minor changes that conform to standard practices may be accomplished when necessary, utilizing any existing facilities for local manufacture to avoid grounding of the aircraft. However, any change that will affect the type of the equipment or the purpose for which it is designed, must not be made without prior approval of the Commanding General, Army Air Forces. In the case of commercial aircraft and other types of equipment incorporating nonstandard parts, the necessary repairs and replacements may be made by using like or equivalent parts and materials furnished by the manufacturer, if they are available, or, if not, by substituting suitable Army Air Forces standard materials. All aircraft released by depots for tactical use, unless changed by specific authority of the Commanding General, Army Air Forces, are so equipped that any essential items of tactical or special equipment, which were removed when the airplanes were transferred to the depot, may be readily installed by the receiving organization.

b. Except as specified in the foregoing, changes on aircraft, engines, and other aeronautical equipment are authorized or directed in the following manner:

(1) By written orders direct from the headquarters, Commanding General, Army Air Forces.

(2) By written orders from the Commanding General, Air Service Command.

(3) By technical orders, technical radiograms, or telegrams.

SECTION III

MAINTENANCE PUBLICATIONS

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11. Army Air Forces regulations.—(See A. A. F. Reg. 5-2.)

a. Purpose.—Army Air Forces regulations contain information of a relatively permanent or continuing nature, directive in character, and detailed and specific in application, pertinent solely to the Army Air Forces.

b. Titles.—The title of each regulation consists of two parts: the general title or major classification, and the subtitle which indicates the specific subject covered.

c. Numbering.—The number assigned each regulation consists of two parts: The first part is the number of the general title or classification and is known as the base number; the second part is the number of the specific title and is known as the subnumber. Subnumbers within each classification will run consecutively.

d. Changes.—(1) When it is found necessary to change or amend the greater portion of a regulation, a complete new regulation is issued.

(2) When a minor change or amendment is desired in a regulation and when for the sake of economy it is considered inadvisable to issue a complete new regulation, the amendatory material is issued in regulations bearing the same title and number as the original, but with the addition of a letter to the subnumber. Amendatory regulations are filed immediately following the regulations which they amend and cross-references are made thereon.

(3) In general, changes contained in amendatory regulations are cumulative; that is, second amendatory regulations bearing the same title include all changes contained in the first amendatory regulations, etc.

e. Rescissions.—Regulations which are rescinded or superseded are withdrawn from the files and destroyed.

f. Filing.—(1) Regulations are filed in a loose-leaf binder. They are arranged in numerical order, first, by the base number or classification, and second, by the subnumber. Regulations in which a letter is included after the subnumber are filed in alphabetical order immediately following the regulations bearing the same base and subnumber.

(2) Each unit or activity of the Army Air Forces maintains at least one complete current file for reference purposes.

g. Index.—(1) The General Index (A. A. F. Reg. 0-1) lists the general titles or major subject classifications together with the corresponding base number applicable to each of the classifications.

(2) A complete index of Army Air Forces regulations is published semiannually, as of January 1 and July 1, under the number 0-2. This index contains a numerical list of all regulations published under each major subject classification. It also contains a list of all regulations which have been rescinded or replaced during the preceding 6 months.

(3) Upon receipt of a new index or an amendment thereto, superseded or rescinded regulations are removed from the files and the necessary action taken to secure and insert in their proper place all current regulations that are missing.

12. Army Air Forces memoranda.—(See A. A. F. Reg. 5-3.)

a. Purpose.—Army Air Forces memoranda contain matter that is directive or advisory in character, but which, due to its temporary nature, is not suitable for inclusion in Army Air Forces regulations.

b. Titles.—The title consists of a descriptive word or phrase assigning a very broad classification to the content matter; such as, "Personnel (Enlisted)," or "Training (Unit)."

c. Numbering.—Each memoranda series is numbered serially for the calendar year, the serial number being preceded by the last two figures of the year, followed by a dash; for example, 41-1, 41-2, etc. The type of publication and the number is placed in the upper left corner of each sheet.

d. Contents.—Each memorandum deals with but one subject. If the subject is supplementary to, or a modification of, other publications, reference is made to the publications concerned immediately following the heading.

e. Distribution.—These memoranda are given distribution "A," in accordance with Army Air Forces regulations prescribing distribution.

f. Filing.—All activities or units to which distribution of these memoranda is made maintain them in standard 3-ring binders or other suitable files.

13. Air Corps circulars.—(See A. C. Circular 5-1.) *a.* Air Corps circulars were published by the Chief of the Air Corps for the purpose of issuing information and instructions of an administrative nature pertaining solely to the Air Corps and which were subject to more or less frequent changes.

b. The method of numbering, filing, issuance of changes, etc., is the same as for Army Air Forces regulations.

14. Army Air Forces circular letters.—(See A. C. Circular 5-2.)

a. Army Air Forces circular letters normally contain instructions of an informative nature that it is desired to bring to the attention of personnel in the Army Air Forces. They do not ordinarily contain continuing instructions.

b. Each circular letter is numbered. The first two digits of the number represent the year in which the letter is published. The remaining digits represent the number of the letter within the year. The two numbers are separated by a dash.

c. The distribution of circular letters is accomplished by the headquarters, Commanding General, Army Air Forces, to the activities affected. A relatively small number of copies are distributed to each activity. Two copies are the normal number, since the information usually concerns only the commanding officer of an activity. In the case of some of the larger activities, a greater number of copies are furnished. If additional copies are desired, they are reproduced locally.

d. Commanding officers of Army Air Forces stations and activities establish and maintain a file of all active circular letters which have been distributed to the station or activity. As soon as a letter is rescinded or superseded, it is removed from the files and destroyed.

15. Specifications.—(See A. C. Circular 5-4.) *a.* Specifications are official publications covering the procurement requirements of the Government for materials and equipment, and for processes in connection with the production thereof.

b. Specifications pertaining to the Army Air Forces are listed in Matériel Division Bulletin No. 23. This bulletin, which is revised monthly, is published for the purpose of providing a convenient and up-to-date list of Army Air Forces (tentative), Federal, and U. S. Army specifications that are approved for use in connection with U. S. Army aircraft construction.

c. The distribution of specifications in connection with Army Air Forces procurements, and to activities of the Army Air Forces, is

accomplished by the Commanding General, Air Service Command. Stations and organizations to which specifications are supplied maintain a separate file (in numerical sequence) of these publications. Specifications supplied to Army Air Forces activities normally consist of those listed in Matériel Division Bulletin No. 23. The number of specification files to be maintained is in accordance with the table shown in A. C. Circular 5-4.

d. When referring to specification numbers in Army Air Forces publications, it is intended that the current revision of the specification be used. When the basic number only is given in a publication, it is interpreted as the current revision. If for any reason either the basic specification or a specific revision only is applicable, the date of the basic specification or the revision letter and date of the specific revision is included.

16. Blueprints and change notices.—(See A. C. Circular 5-3.)

a. General.—(1) A set of drawings covering an article of equipment consists of—

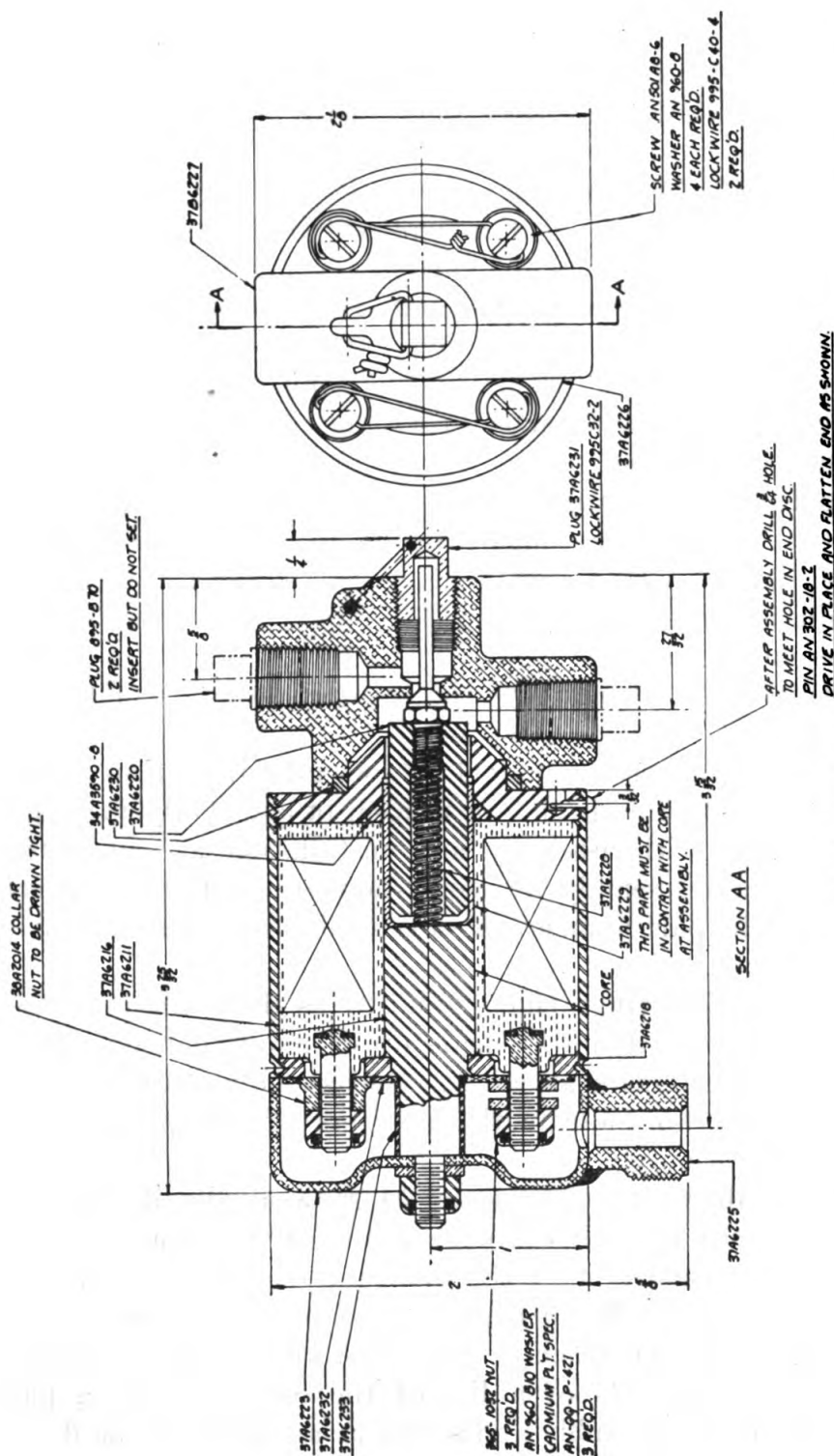
- (a) A main assembly drawing.
- (b) Subassembly drawings.
- (c) Detail drawings of all parts that comprise the assembly.
- (d) A parts list.

(2) Main assembly drawing (fig. 1) shows all parts of an article in their proper position and relation to each other. Only principal dimensions dealing with assembly and installation are indicated. Primarily, the main assembly drawing shows the relation between subassemblies. The part numbers of subassemblies are also indicated on the drawing.

(3) Subassembly drawings (figs. 2 and 3) as the name indicates, are assembly drawings of units (made up of more than one part) which are parts of the main assembly. Subassembly drawings have part numbers and also indicate the numbers of the parts which comprise the subassembly.

(4) The detail drawings (figs. 4 and 5) show all details required for the manufacture of each component unit of the main or subassembly. They normally show the material specifications, dimensions, shop notes, type of finish required, number of pieces required for each assembly, special machine processes, and the part number.

(5) A parts list consists of a list of the drawings for a particular subassembly or assembly and serves as an index of the drawings. The order in which parts are listed on the parts list, as a rule, follows the reverse order of assembly, that is, the main assembly is listed first. The entire article is then subdivided in the reverse order



NOTE.—Design valve lift $\frac{3}{64} + \frac{1}{64}$ (REF). Assembly must be clean and free from dirt and chips. Assembled valve must operate with 15 lb. per sq. in. gasoline pressure applied at the “in” connection with the “out” connection open and with 9 volts d-c applied to the terminals. Leakage test: 15 lb. per sq. in. gasoline pressure will be applied to the “in” connection with the “out” connection open and prior to the installation of plug No. 37A6231. Leakage through the valve in excess of 10 drops per minute shall be cause for rejection. Leakage test (joint and casting) 25 lb. per sq. in. gasoline pressure will be applied to the “in” connection with all other openings plugged. Any leakage will be cause for rejection. Dimensions shown are for installation purposes only.

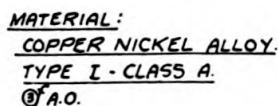
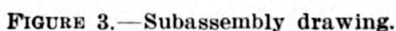
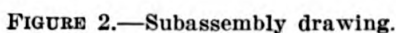


FIGURE 4.—Detail drawing.

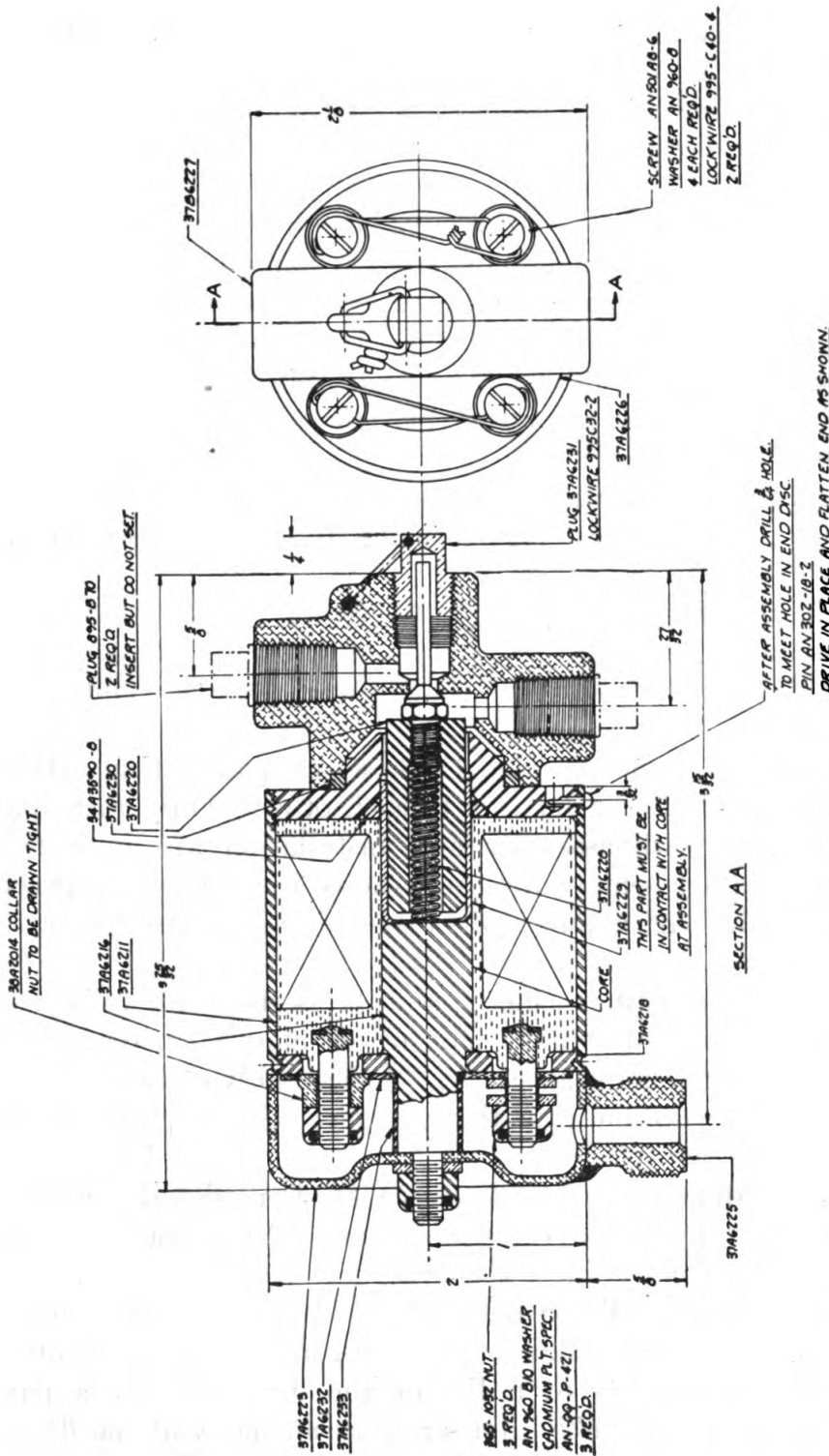
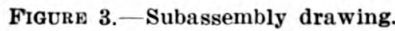
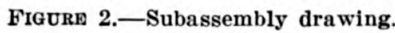


FIGURE 1.—Assembly drawing.

NOTE.—Design valve lift $\frac{3}{64} \pm \frac{1}{64}$ (REF). Assembly must be clean and free from dirt and chips. Assembled valve must operate with 15 lb. per sq. in. gasoline pressure applied at the "in" connection with the "out" connection open and with 9 volts d-c applied to the terminals. Leakage test: 15 lb. per sq. in. gasoline pressure will be applied to the "in" connection with the "out" connection open and prior to the installation of plug No. 37A6231. Leakage through the valve in excess of 10 drops per minute shall be cause for rejection. Leakage test (joint and casting) 25 lb. per sq. in. gasoline pressure will be applied to the "in" connection with all other openings plugged. Any leakage will be cause for rejection. Dimensions shown are for installation purposes only.



of assembly and the relationship of parts indicated by indentation of titles. The parts list in figure 9 illustrates these features.

b. Numbering of drawings.—Drawings bear a number which is placed in the lower right-hand corner of the drawing. On sub-assembly and detail drawings, the part number of the next as-

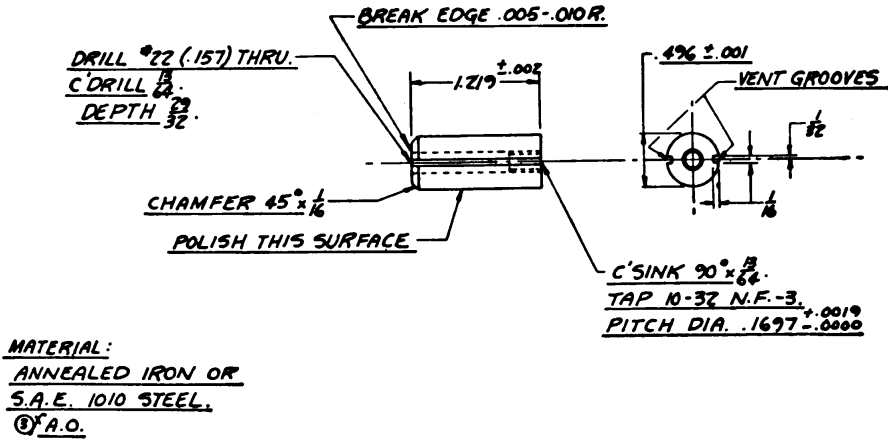


FIGURE 5.—Detail drawing.

sembly, or the assembly of which the article is a part, is placed immediately above the part number in the lower right-hand corner of the drawing, as shown in figure 2.

c. Right- and left-hand views.—Unless it is absolutely necessary to do otherwise, machines and similar articles are drawn facing the left. Views facing the right are usually indicated on the drawing as right-hand views.

d. Scale of drawings.—(1) All full size drawings are drawn to scale within 1/32 inch.

(2) Enlarged drawings are necessary when the full size scale is small or crowded and thus the drawing is not clear.

(3) Large parts that may be shown clearly are drawn to a smaller scale.

(4) Any convenient scale is used; however, the preferred scales are 2, 4, 1/2, and 1/4 sizes.

(5) All drawings indicate the scale size.

(6) When all views of a drawing are full size as indicated, and one or more sections are enlarged, the words "enlarged section" are placed under that section.

(7) When all the views are drawn to a reduced scale, the scale is noted above the title block. When the main views are in one reduced scale and other views or sections are in another scale, the scale of each view or group of views is indicated.

e. Drawing changes.—(1) When changes are required on a drawing, they are indicated by change letters, the first change to be indicated by the letter A, the second by the letter B, etc. These letters are shown in two locations on the drawing; one appears in the change block, which is in the upper right-hand corner of the drawings, and the other is placed near the part affected by the change, and the letter encircled. A typical drawing change is indicated in figure 2.

(2) Drawing change notices (fig. 6) are issued for the purpose of maintaining up-to-date blueprint files and contain information pertaining only to changed drawings and blueprints. The lower part of the form entitled "Service Change Notice" is used for including references to technical orders that contain instructions for reworking or changing the equipment. Change notices also contain instructions for the disposition of stock that is not to be continued in service.

f. Distribution.—(1) The distribution of blueprints and change notices covering Army Air Forces equipment and supplies is accomplished by the Air Service Command. Regular distribution to Army Air Forces depots and stations which have facilities for accomplishing the work prescribed is made on the basis of local equipment, stock on hand affected, and work performed.

(2) When activities require copies of blueprints or change notices, or information pertaining thereto, requests are forwarded to the Commanding General, Air Service Command. Requests should include the following information if available:

- (a) The number and nomenclature of the blueprint desired.
- (b) The number and change letter of the change notice desired.
- (c) The number of copies desired.

(3) The depot engineering officers, depot supply officers, and station engineering officers are responsible for the proper filing, care, and maintenance of the blueprint files under their jurisdiction.

g. Filing.—(1) Activities receiving blueprints and accompanying change notices maintain the required number of complete and up-to-date files. When change notices are received indicating that individual drawings are no longer active, the blueprints made inactive

which pertain to equipment or stock on hand locally, or stock which may be required in the future, are placed in inactive files. When individual drawings are no longer required they are removed from the files and destroyed. On receipt of blueprints superseding others, the superseded prints are destroyed. Change notices applying to inactive prints are destroyed with the prints to which they pertain.

Mat. Div. A. C. 17-Wright Field 11-8-38-4M

AIR CORPS—MATERIEL DIVISION—DAYTON, OHIO

LOT No. XX-17127REFERENCE NO. 69797**DRAWING CHANGE NOTICE**DRAWING No. 37D6210CHANGE LETTER AAFFECTING Oil Dilution Solenoid ValveDATE 3-1-38NAME VALVE ASSEMBLY - OIL DILUTION SOLENOID**CHANGE**

A-Removed test note "Assembled valve must function satisfactorily when subjected to 10 lbs. per sq. inch fuel pressure and 9 volts are applied to terminals. Test valve for leaks at 10 lbs. per sq. inch fuel pressure" and added note "Assembled valve must operate with 15 lbs. per sq. in. gasoline pressure applied at the IN connection with the OUT connection open and with 9 volts D.C. applied to the terminals. Leakage test:- 15 lbs. per sq. in. gasoline pressure shall be applied to the IN connection with the OUT connection open and prior to the installation of plug No. 37A6231. Leakage through the valve in excess of 10 drops per minute shall be cause for rejection. Leakage test (joint and casting):- 25 lbs. per sq. in. gasoline pressure shall be applied to the IN connection with all other openings plugged. Any leakage shall be cause for rejection" instead.

REASON FOR CHANGE

To clarify test requirements.

AUTHORITY GEORGE C. KENNEY,
Chief, Production Engr. Sec.

ISSUED BY REVISION UNIT, DRAFTING AND RECORDS BRANCH

E. A. Zahn**SERVICE CHANGE NOTICE****FIELD SERVICE SECTION.**

WRIGHT FIELD, DAYTON, OHIO

CHANGE ORDERAugust 31, 1939
Class. 03-D**DISTRIBUTION**

M. L. #1

HUGH A. BIVINS, Major, Air Corps

Chief, Field Service Section

FIGURE 6.—Drawing change notice.

(2) Blueprints and change notices are distributed for official files only, and not for personal files of individuals. When persons having supervision of blueprint files are relieved, they turn over all data to their successors. When blueprint files are discontinued or are of no further value, instructions for disposition of the active blueprints and change notices therein are requested from the Air Service Command.

(3) To facilitate filing, identification, references, etc., all blueprints are numbered. The blueprint number is also the part number of the part or assembly shown. They may be readily located in the files by obtaining the identifying blueprint number from one of the following references covering the equipment involved:

- (a) Drawing parts list.
- (b) Stock list.
- (c) Basic technical order (handbook).
- (d) Assembly drawing.

(4) Blueprints which form a part of the Air Corps standards book are placed in that book and not in a numerical file.

(5) Change notices bear the blueprint numbers to which they pertain and are filed numerically as outlined for blueprints. They are placed in a separate file or interspersed in the blueprint file with the blueprints to which they pertain. If placed in a separate file, they are readily located by means of the blueprint number and by the change letter which also appears on the changed blueprint.

17. Technical orders, radiograms, and telegrams.—(See A. C. Technical Order 00-5.) *a. General.*—(1) Air Corps technical orders are directives published by order of the Commanding General, Army Air Forces, for the purpose of issuing specific instructions and information of a technical nature covering the operation, maintenance, storage, inspection, etc., of Army Air Forces equipment and materials and for the establishment of a uniform system of files wherein such data are readily accessible.

(2) Unless otherwise directed, technical orders are compiled, printed, and distributed by the Commanding General, Air Service Command. Those which involve any changes in prescribed policies, introduce new policies, affect inspection practices, or otherwise fall beyond the scope of routine technical instructions, are in each case submitted to the Commanding General, Army Air Forces, for approval prior to publication.

(3) Active technical orders are revised from time to time to keep them up-to-date and to combine, wherever possible, each group of related subjects into one technical order.

(4) The publication of technical instructions as technical orders permits consolidation of complete files of technical instructions into one numerical sequence and enables all technical instructions and information relating to individual airplanes, engines, etc., to be included in individual binders, if desired, for the convenience of crew chiefs, inspectors, and other individuals whose duties require constant use of such limited files.

b. Form and printing.—Technical orders are published in loose-leaf form, letter size, with the left margin punched for filing in standard Army Air Forces maintenance publication binders. If the number of sheets in any one technical order warrants, it is stapled together at the time of printing. Handbooks of instructions are published with technical order numbers assigned, and are filed in proper numerical sequence with other technical orders. Technical orders are considered restricted documents, therefore they are marked “RESTRICTED” at the top and bottom of each page.

c. Titles.—The title of each technical order consists of three parts:

(1) The first, the general title is, in most cases, that of the general Army Air Forces property class of the equipment to which the order pertains: for example, Airplanes and Spare Parts, Engines and Spare Parts, etc.

(2) The second, the group title, is a further grouping of related subjects under a main class group; for example, General, Tires and Tubes, etc.

(3) The third, the subject, indicates as precisely as possible the nature of the contents and the particular equipment or part to which the order pertains; for example, Cleaning of Aeronautical Equipment, etc.

d. Numbering.—For purposes of identification, indexing, and filing, technical orders are assigned numbers consisting of two or more parts:

(1) The first part of the number is that of the general Army Air Forces, property class covered, except that the 00 series is established for indexes, and orders pertaining to the subject of publications, systems, and miscellaneous instructions that cannot be otherwise classified. For example, the number 06 is the first part of the number of all technical orders pertaining to fuels and lubricants.

(2) The second part is a number assigned to identify all the technical orders pertaining to a particular subdivision (type, model, etc.) of the general property class covered. For example, referring to the numerical list of technical orders in the index, under

the general class 06, Fuels and Lubricants, the number 5 is assigned to all technical orders covering fuels; the number 10 to those covering lubricants, etc.

(3) The third part of the number is the serial number of the individual technical order of each subdivision of a general property class, a separate series of numbers being used for each subdivision. For example, under class 06 and subdivision 10, lubricants, all technical orders related to this subject are numbered in the order of their issue, as follows: 06-10-1, 06-10-2, 06-10-3, etc. The parts comprising a complete number are always separated by dashes. When amendments are issued as separate publications, they are designated, in the order of their issue, by adding a suffix letter to the number. For example, the first amendment to Technical Order 13-5-2 is numbered 13-5-2A, the second 13-5-2B, etc. Letter suffixes may also be used to insure a file location adjacent to a particular previously issued technical order when the next consecutive serial number has been previously assigned.

(4) As a rule the technical orders that constitute the complete basic or general treatise covering airplanes and engines are composed of four parts as follows:

(a) Operations and flight instructions (information normally required by pilot).

(b) Service instructions (for maintenance personnel).

(c) Overhaul instructions (for depot overhaul, inspection, or repair operations).

(d) Parts catalog.

Technical orders of this class are assigned basic numbers which reply to all four parts. In order to provide for separate distribution of individual portions of the basic technical order (handbook), the four parts are further identified by appending -1 to -4 to the basic technical order number. For example, the complete technical order covering the B-17C airplane will be Technical Order 01-20EC. In this example the first part of the number 01 is that of the general property class, the second part, the number 20 designates Boeing airplanes generally, E designates a bombardment type, and the letter C is assigned to the B-17C model of that manufacturer. The four divisions of the handbook are distinguished as follows:

01-20EC-1 Operations and flight instructions.

01-20EC-2 Service instructions.

01-20EC-3 Overhaul instructions.

01-20EC-4 Parts catalog.

Thus, the complete Technical Order 01-20EC is composed of four technical orders, numbered 01-20EC-1 to -4, inclusive. These are distributed and filed either singly, or as a complete technical order. Technical orders of this class are usually amended through the issuance of revised pages, to be inserted in their proper place in the original publication. Amendments issued as separate publications, or subsequent publications pertaining to the same equipment, are serially numbered by adding a third part to the basic number following the sequence assigned to the four parts of the technical order.

(5) When succeeding models of the same equipment require the issuance of new publications pertaining only to the new models, the second part of the new technical orders have appended to the basic number an additional letter in alphabetical sequence in the order of issue, to denote the identity of the different models and the order of filing. For example, in the case of Pratt & Whitney engines, 02-10D is the basic number for the R-1340 series, and successive publications covering the various models are as follows:

02-10DA (-11 to -29 models).

02-10DB (-33 model).

02-10DC (-39 to -51 models).

(6) When the numbering of existing technical orders does not conform to the foregoing, corrected numbers are assigned and indexed, wherever possible, as each technical order is republished.

e. Technical orders requiring inspections or changes to equipment.—

(1) Technical orders containing instructions which require the use of drawings, materials, facilities, or additional funds that are not at the disposal of the activity concerned are not distributed by the Commanding General, Air Service Command, until the necessary drawings, materials, facilities, or funds are available for compliance therewith. Where practicable, the required parts are furnished without requisition and identified with the pertinent technical order.

(2) All technical orders that contain instructions requiring non-periodic (one-time) inspections or changes to equipment contain a statement in the first paragraph or a notation in the heading, stating when the work is to be performed and whether by service activities or depots. Likewise, technical orders that contain instructions requiring routine or periodic inspections or maintenance work contain a notation in the heading requiring the entering of such instructions in the prescribed manner on W. D., A. C. Form No. 41A.

*f. Preliminary instructions.—*Where time or other conditions do not permit the preparation of more complete instructions, such instal-

lation, operation, and service maintenance instructions as may be available are marked "preliminary," and assigned technical order numbers. This procedure has been adopted to expedite distribution of advance information in a form that may be indexed and included in technical order files. These orders are distributed for informative purposes only, since in some cases they are unedited recommendations of the manufacturer, and do not require the requisitioning, use, or installation of the article described therein, unless so stated specifically. All commercial manuals distributed by a manufacturer without an identifying technical order are classed as preliminary.

g. Index.—(1) A loose-leaf index, entitled Index of Technical Instructions and Information, listing all active technical instructions, and revised each month by issuance of a complete new index, is published as Technical Order 00-1.

(2) Revised pages listing all new or revised publications issued and those rescinded or replaced are published monthly. Each change listed on the revised pages is marked with an asterisk so that all revisions are readily apparent. Upon receipt, all technical order files are checked to conform to the changes indicated, and the new pages are inserted in the index. The pages replaced thereby are removed and destroyed. As new publications are received, the numbers, titles, and dates are entered in the numerical section of the index.

h. Filing.—(1) Technical orders are arranged in standard Air Corps binders, in numerical sequence as follows:

01-1-	01-5A-2	02-10D-1	02-20A-2
01-1-2	01-10A	02-10DA-1	02-20B-1
01-1-3	01-15-1	02-10DB-1	06-1-1
01-5-1	01-15-2	02-20-1	06-1-1A
01-5-2	01-15-3	02-20-5	06-10-1
01-5A	02-1-1	02-20A	
01-5A-1	02-1-2	02-20A-1	

(a) All technical orders of the same general property class are filed in groups, in the order of the property class number. For example: all 01 series first, all 02 series next, etc.

(b) The publications in each general property class are, in turn, arranged numerically in the order of each subdivision (model, type, or class of property) as indicated by the second part of the technical order numbers. For example, in the group comprising the 01 series, all 01-1 numbers are assembled first, all 01-5 numbers second, all 01-10 numbers third, etc., and within each group the orders are arranged so that the third part of the number is in its proper sequence.

(2) Rescinded publications are removed from the files and destroyed. On receipt of new publications replacing those in the files, the replaced publications are immediately removed and destroyed, and the new ones inserted in their places.

i. Pilots' Information Index.—When the information contained in technical orders is of such a nature as to be essential to all flying personnel for safety and proficiency, it is included in the Pilots' Information Index, and the heading of the technical order contains the following statement: "This Technical Order will be included in the Pilots' Information Index, Air Corps Circular 45-7."

j. Technical radiograms and technical telegrams.—In cases of extreme emergency the Commanding General, Air Service Command, may issue technical instructions to Army Air Forces activities in the form of technical radiograms or technical telegrams bearing the numbers as prescribed for technical orders. These are replaced as soon as practicable by the issuance of suitable technical orders.

18. Airplane operation instructions data sheets.—Data sheets containing information essential to the pilot are compiled and distributed as rapidly as performance and flight data become available for each model of airplane. These are known as Operation Instructions Data Sheets. Initial distribution of these Operation Instructions Data Sheets is made by the Air Service Command on the basis of airplane distribution. Additional copies are furnished upon request. Copies should be maintained in the technical order files. These sheets are being included with the operations and flight instructions section of the handbook for all airplanes currently produced.

a. The first sheet, entitled Operation Instructions includes all information consistent with brevity which a pilot may require as a ready reference.

b. The second sheet is entitled Cruising Data, and furnishes in tabular form the manifold pressure, rpm, true air speed, and gasoline consumption in gallons per hour that may be expected under standard atmospheric conditions for various altitudes, and for three conditions of flight, namely, high speed, desired cruising, and maximum range.

c. A third sheet is entitled Calibrated Speed and Gas Consumption Curves. This is normally based on the official performance test of the model of airplane concerned, and should provide the pilot with the approximate performance to expect from an airplane of this model under the conditions indicated. These curves are in-

cluded in the operation and flight instructions section of the basic technical order.

d. An additional sheet is entitled Range Chart and is based on the performance of a typical airplane of the model concerned. These charts indicate the range in still air as a function of speed, altitude, percent of power, and fuel and bomb load for normal and alternate load conditions. Cruising limitations are also indicated on the chart. The information furnished on these charts is based upon the performance and fuel consumption used in the calibrated speed and gas consumption curve. The use of these charts provides a convenient method of predicting the range in air miles that may be expected under various load and operating conditions.

19. Parts catalogs.—*a.* The parts catalog comprises a part of and has the same number as the handbook (basic technical orders) for airplanes and engines (see par. 17). It consists of three major divisions:

Numerical list (fig. 7).

Alphabetical list (fig. 8).

Installation and assembly list (fig. 9).

VALVE ASSEMBLY—OIL DILUTION SOLENOID			
NUMERICAL LIST			
Part No.	Alphabetical list page No.	Part No.	Alphabetical list page No.
34A3590-8-----	6	37A6223-----	6
37A6211-----	6	37A6224-----	6
37A6212-----	6	37A6225-----	6
37A6213-----	6	37A6226-----	6
37A6214-----	6	37A6228-----	6
37A6215-----	6	37A6229-----	6
37A6216-----	6	37A6230-----	6
37A6217-----	6	37A6231-----	6
37A6218-----	6	37A6232-----	6
37A6219-----	6	37A6233-----	6
37A6220-----	6	37B6227-----	6
37A6221-----	6	37D6210-----	6
37A6222-----	6	38A2014-----	6

FIGURE 7.—Parts catalog (numerical list).

Page 6.

VALVE ASSEMBLY—OIL DILUTION SOLENOID

ALPHABETICAL LIST

Description		Assem- bly list Page No.	Total quantity	Class	Unit price
Description	Part No.				
Body—Solenoid valve.....	37B6227.....	1	1	01-I	-----
Boss—Cover.....	37A6225.....	2	1	01-I	-----
Clip—Terminal.....	37A6215.....	1	2	01-I	-----
Coil—Assembly.....	37A6211.....	1	1	01-I	-----
Collar—Ground.....	38A2014.....	1	1	01-I	-----
Core.....	37A6219.....	1	1	01-I	-----
Cover.....	37A6224.....	2	1	01-I	-----
Cover—Assembly.....	37A6223.....	2	1	01-I	-----
Cup—Valve sealing.....	37A6229.....	1	1	01-I	-----
End—Fixed.....	37A6218.....	1	1	01-I	-----
End—Removable.....	37A6226.....	1	1	01-I	-----
Gasket—Valve (large).....	37A6230.....	1	1	01-I	-----
Housing—Solenoid.....	37A6217.....	1	1	01-I	-----
Housing Assembly—Solenoid.....	37A6216.....	1	1	01-I	-----
Nut—Self locking.....	365-1032.....	2	3	04-A	-----
Pin—Escutcheon.....	AN302-18-2.....	2	1	29	-----
Pin—Escutcheon.....	AN302-18-5.....	1	1	29	-----
Plate—Insulating.....	32A6232.....	1	1	01-I	-----
Plug—Pipe.....	895B70.....	2	2	04-A	-----
Plug—Solenoid valve pipe.....	37A6231.....	1	1	01-I	-----
Plunger Assembly — Solenoid valve.....	37A6220.....	1	1	01-I	-----
Plunger—Valve.....	37A6221.....	1	1	01-I	-----
Post—Terminal.....	37A6214.....	1	2	01-I	-----
Ring—Packing.....	34A3590-8.....	1	1	01-B	-----
Screw—Fillister head.....	AN501A8-6.....	2	4	29	-----
Spool.....	37A6212.....	1	1	01-I	-----
Spring—Valve.....	37A6228.....	1	1	01-I	-----
Terminal—Assembly.....	37A6213.....	1	2	01-I	-----
Tube—Insulating.....	37A6233.....	1	1	01-I	-----
Valve Assembly—Oil dilution solenoid.....	37D6210.....	1	1	03-D	-----
Valve—Solenoid.....	37A6222.....	1	1	01-I	-----
Washer.....	AN960B10.....	2	3	04-A	-----
Washer—Plain.....	AN960-8.....	2	4	04-A	-----
Wire (commercial product).....	Spec.-57-211.....	1	.52 lb.	68	-----
Wire—Lock.....	995C32-2.....	2	1	04-A	-----
Wire—Lock.....	995C40-4.....	2	2	04-A	-----

FIGURE 8.—Parts catalog (alphabetical list).

2 PAGES, PAGE 1

PART LIST NO. 58021

[illegible]

FIGURE 9.—Parts catalog (installation and assembly list)—Continued.

6. If it is necessary to locate the assembly to which a part belongs, consult the numerical list in the parts catalog. Opposite the part number in the numerical list, the alphabetical list page number is given. The alphabetical list indicates: the part number, the nomenclature, and the installation and assembly list page number. The installation and assembly list indicates: the title of the assembly, and the relation

of the part to the assembly. The main assembly title is placed at the top of the assembly list page and all parts comprising that assembly are listed directly under it.

20. Stock lists.—(See A. C. Technical Orders 00-5 and 00-35A-1.)

a. General.—Army Air Forces stock lists contain prices, standard nomenclature, part numbers, status, unit of issue, and stock numbers of all items of Army Air Forces property that are in stock or being procured. Specific instructions are included in the front of each stock list for its use by service activities. The items are listed in the order of sequence that is followed in filing stock record cards. Stock lists are normally revised and republished annually, and upon receipt of new issues those replaced are removed from the files and destroyed. Property records affected are checked and changed if necessary upon receipt of each new stock list. A typical stock list page is illustrated in figure 10.

b. Property classes.—(1) Army Air Forces equipment and supplies are divided into the following property classes for each of which one or more stock lists are provided :

- 01 Airplanes and spare parts.
- 02 Engines and spare parts.
- 03 Aircraft accessories.
- 04 Aircraft hardware and rubber materials.
- 05 Aircraft instruments and laboratory test equipment.
- 06 Fuels and lubricants.
- 07 Dopes, paints, and related materials.
- 08 Electrical equipment and supplies.
- 10 Photographic equipment and supplies.
- 11 Aircraft combat material.
- 12 Fuel and lubricating equipment and supplies.
- 13 Clothing, parachutes, equipment and supplies.
- 14 Hangars and other demountable buildings and parts.
- 16 Balloon equipment and supplies.
- 17 Machinery, shop equipment and tools.
- 18 Special tools.
- 19 Flying field and hangar equipment.
- 21 Cordage, fabrics and leathers.
- 22 Woods.
- 23 Metal and composition material.
- 24 Chemicals.
- 25 Office equipment and supplies.
- 26 School equipment.
- 29 Commercial hardware and miscellaneous supplies.
- 30 Publications.

STOCK LIST

CLASS 65-8 AIRCRAFT HARDWARE JUNE 1, 1958										50
PART NO.	NAME	CONTROL	STATUS	UNIT OF ISSUE	UNIT COST			STOCK NUMBER		CLASS
					DOLLARS	CTS	M	CLASS	NUMBER	
270810	JOINT-AIRCRAFT UNIVERSAL TYPE B 3-0 IN			0 NR EA	140			65	445300	
270812	JOINT-AIRCRAFT UNIVERSAL TYPE B 3-4 IN			0 NR EA	185			65	445400	
270816	JOINT-AIRCRAFT UNIVERSAL TYPE B 1 IN			0 NR EA	160			65	445500	
270830	JOINT-AIRCRAFT UNIVERSAL TYPE B 1 1-4 IN			0 NR EA	230			65	445600	
C643	JOINT ASSY-FUEL COCK CONTROL UNIVERSAL---USE 270810 JOINT		EXCESS	EA	111			65	445620	
C644	JOINT ASSY-FUEL COCK CONTROL UNIVERSAL---USE 270812 JOINT		EXCESS	EA	180			65	445640	
3428631	JOINT ASSY-FUEL COCK CONTROL UNIVERSAL			0 NR EA	136			65	445660	
066656	JOINT ASSY-FUEL COCK CONTROL UNIVERSAL		EXCESS	EA	90			65	445680	
AN876	JOINT-BALL AND SOCKET 1-4			0 NR EA	32			65	445700	
RF159	KEY-RECTANGULAR ROUND END 3-16 X 1-8 X 5-8 IN			0 NR EA	8			65	446000	
AN875-3	LINER-MOSE 3-16 X .032 IN			0 NR EA	1			65	446900	
AN875-4	LINER-MOSE 1-4 X .032 IN			0 NR EA	1			65	447000	
AN875-6	LINER-MOSE 3-0 X .032 IN			0 NR EA	15			65	447050	
AN875-8	LINER-MOSE 1-0 X .032 IN			0 NR EA	2			65	447100	
AN875-10	LINER-MOSE 5-0 X .032 IN			0 NR EA	27			65	447150	
AN875-12	LINER-MOSE 3-4 X .042 IN			0 NR EA	4			65	447200	
AN875-16	LINER-MOSE 1 X .042 IN			0 NR EA	9			65	447250	
38A6136	NEEDLE-INSTRUMENT VACUUM CONTROL VALVE ADJUSTING			0 NR EA	5			65	449000	
AN4082-1	NIPPLE ASSY-PRIMER SYSTEM JET			0 NR EA	17			65	450000	
3581212-1	NIPPLE ASSY-PRIMER SYSTEM JET OLD STYLE			0 NR EA	17			65	450050	
	NIPPLE-BRASS 1-0 X 1 1-2 IN LONG			0 NR EA	3			65	450100	
895-60	NIPPLE-CLOSE 1-0 IN P T			0 NR EA	39			65	451000	
895-61	NIPPLE-CLOSE 1-4 IN P T			0 NR EA	44			65	451100	
895-62	NIPPLE-CLOSE 3-0 IN P T			0 NR EA	49			65	451200	
895-63	NIPPLE-CLOSE 1-0 IN P T			0 NR EA	60			65	451300	
895-64	NIPPLE-CLOSE 3-4 IN P T			0 NR EA	8			65	451400	
895-65	NIPPLE-CLOSE 1 IN P T			0 NR EA	10			65	451500	
895-90	NIPPLE-HEX SHOULDER 1-0 IN P T			0 NR EA	5			65	452000	
895-91	NIPPLE-HEX SHOULDER 1-4 IN P T			0 NR EA	85			65	452100	
895-92	NIPPLE-HEX SHOULDER 3-0 IN P T			0 NR EA	85			65	452200	
895-93	NIPPLE-HEX SHOULDER 1-2 IN P T			0 NR EA	11			65	452300	
895-94	NIPPLE-HEX SHOULDER 3-4 IN P T			0 NR EA	16			65	452400	
895-95	NIPPLE-HEX SHOULDER 1 IN P T			0 NR EA	20			65	452500	
037745	NIPPLE-MOSE FUEL 1-4 IN TUBE---1-0 IN P T			0 NR EA	7			65	453000	
037783	NIPPLE-MOSE FUEL 3-0 IN TUBE---1-0 IN P T			0 NR EA	35			65	453100	
037729	NIPPLE-MOSE FUEL 3-0 IN TUBE---3-0 IN P T			0 NR EA	9			65	453200	
037946	NIPPLE-MOSE FUEL 1-2 IN TUBE---1-4 IN P T			0 NR EA	12			65	453300	

FIGURE 10.—Stock list page.

(2) Items listed under some property classes are assigned a sub-class letter, in which case separate stock lists are provided for each. Examples are as follows:

01B Parts for Consolidated airplanes.

01C Parts for Curtiss airplanes.

c. Stock list numbers.—(1) The number, title, property class, date of issue, and file symbols for each Army Air Forces stock list published are listed in a separate section of the Index of Technical Instructions and Information, Technical Order 00-1.

(2) Each stock list is assigned a basic number consisting of the Army Air Forces property class symbol, preceded by the letter S to avoid conflict with technical orders bearing the same number. Thus the basic number of the stock list for class 07 materials, dopes, paints, and related materials, is numbered S-07. Subsequent amendments thereto, or related supply instructions, are issued with dash numbers appended to the basic stock list number, for example, S-07-1, S-07-2, etc. The numerical sequence for filing stock lists and supply data is as listed in Technical Order 00-1.

d. Status code.—The status of each article listed in a stock list is indicated by means of a code as follows:

(1) Status code is employed to designate the status of articles as to procurement, storage, issue, and expendability.

X Experimental.
 ST Service test.
 LP Limited procurement.
 S Standard.
 SS Substitute standard.
 LS Limited standard.
 OB Obsolete.
 NS Nonstandard.
 NX Nonexpendable.
 R Recoverable.
 NR Nonrecoverable.
 EXCESS Not reclaimable.

(2) These terms may be defined as follows:

(a) *Experimental.*—Articles which are in the process of development and have not progressed to the stage where engineering tests indicate that they have sufficient satisfactory military characteristics to warrant service tests preparatory to standardization.

(b) *Service test.*—Articles which have progressed beyond the experimental stage and appear to possess the desired military characteristics. Such articles have operated satisfactorily in engineering tests

and have been approved for issue in limited quantity for service tests preparatory to classification as standard.

(c) *Limited procurement*.—Articles which have completed favorable service tests and appear to possess suitable military characteristics. These articles have been approved as to type, but are not classified as standard. Approval as to type signifies that the item is probably suited for service use, but requires refinement in design or further service testing to determine its final suitability.

(d) *Standard*.—Articles that have been adopted for the use of the Army Air Forces. Such articles are the most advanced and satisfactory of the adopted types and are preferred for procurement to meet supply demands.

(e) *Substitute standard*.—Articles that have been adopted for the use of Army Air Forces, but do not possess complete satisfactory military characteristics as compared to standard articles. Articles in this group are considered satisfactory substitutes for standard articles and are procured, when necessary, to supplement the supply of standard articles.

(f) *Limited standard*.—Articles that have been adopted for the use of the Army Air Forces, but do not possess completely satisfactory military characteristics as compared to standard articles. These articles are considered as suitable substitutes for standard articles and are in use or available for issue to meet supply demands. Complete major units of this group are not reproduced, but component parts and complementary articles may be procured if necessary to maintain the complete major unit in a serviceable condition.

(g) *Obsolete*.—Articles on hand which have been declared unsuitable for further use.

(h) *Nonstandard*.—Usually commercial articles which do not meet Army Air Forces standards.

(i) *Nonexpendable*.—Articles which may not be dropped from accountable records on W. D., A. C. Form No. 81 (Stores Charge). Articles in this class which are lost or damaged beyond economical repair are dropped from the records by an approved W. D., A. G. O. Form No. 36 (Statement of Charges), W. D., A. G. O. Form No. 15 (Report of Survey), or W. D., I. G. D. Form No. 1. Articles in this class are issued to responsible officers by accountable officers on W. D., A. C. Form No. 99 (Memorandum Receipt).

(j) *Recoverable*.—Expendable articles which can normally be restored to use economically or that are particularly subject to loss or are dropped from the records by an approved W. D., A. G. O. Form No. 81, in the case of initial issues and are repaired or exchanged for

similar articles when they become unserviceable, due to fair wear and tear in service.

(*k*) *Nonrecoverable*.—Articles which are consumed in use or that cannot normally be restored to use. Articles in this class are dropped from the accountable records when issued for immediate consumption on W. D., A. C. Form No. 81.

(*l*) *Not reclaimable*.—Expendable articles on hand in such quantities that reclamation is considered uneconomical or undesirable.

21. Distribution of technical orders and stock lists.—(See A. C. Technical Order 00-25-3.) *a. General.*—(1) Commanding officers of Army Air Forces activities establish and maintain the number of files of maintenance publications necessary within the allowances prescribed in Technical Order 00-25-3. The files of tactical organizations contain all maintenance publications pertinent to the type of equipment which they are required to operate or maintain.

(2) Each station garrisoned by more than one squadron maintains one complete file of maintenance publications as follows:

Station, base, or subdepot supply office.

Station, base or subdepot engineering office.

Station or base technical inspector's office.

Transient aircraft crew.

Air base and matériel squadron.

These files contain one copy of each active publication. In addition, one copy of each airplane and engine handbook is furnished each organization of a base or group so that, if desired, each organization may maintain one complete file.

(3) To facilitate station distribution and to insure that correct distribution reaches all organizations, shipments of maintenance publications for each station are separated and marked for the particular organization for which they are intended. Publications marked for organizations that are no longer located at a particular station are forwarded to the stations to which the organization has been transferred.

b. Aircraft files.—(1) Aircraft files are maintained in each operating aircraft. The file contains—

One copy of Technical Order 00-20A, Visual Inspection System for Airplanes.

One copy of the technical orders covering operation and service instructions for the particular aircraft and engine involved, with current supplements and amendments.

The aircraft file remains with the airplane at all times and is placed in the aircraft data case when not in use for reference purposes. At each 50-hour inspection, the publications in the data case are compared with Technical Order 00-1 to determine whether the latest issues are on hand.

(2) Prior to delivery of new airplanes from a factory the Army Air Forces representative located at the particular plant places the technical order covering the airplane and engine (or temporary operation instructions in lieu thereof) in the airplane.

c. Special hangar files.—(1) One centralized file of maintenance instructions is maintained in each squadron and detachment operating aircraft. This file also contains such other publications as are normally required for frequent reference, including local orders and instructions or pertinent extracts, etc., which may be issued from time to time.

(2) When practicable, publications comprising the special hangar file are placed on wall desks of standing height. Binders are usually permanently attached to the desk or adjacent wall by means of a suitable length of light chain.

(3) The proper maintenance of the hangar files is an administrative responsibility of the organization commander who insures that all personnel concerned are conversant with each new pertinent publication and that the required entries on W. D., A. C. Form No. 41 (Maintenance Inspection Record) and W. D., A. C. Form No. 41A are made where applicable.

d. Distribution.—(1) Maintenance publications are distributed for the official files of units, organizations, and offices and not for the personal files of individuals. When an individual having supervision over the files is relieved from this assignment, all files are turned over to his successor. When an activity is discontinued, all files on hand are reported to the Chief, Field Services, Wright Field, Dayton, Ohio, for disposition. Sufficient copies of all maintenance publications (except airplane and engine handbooks) are furnished each Army Air Forces organization and office to maintain all authorized files. Airplane and engine handbooks are furnished for all complete files, and for all files of organizations possessing this equipment. Distribution is made in accordance with Technical Order 00-25-3.

(2) Newly formed organizations are furnished initially with the prescribed number of copies of publications without requisition. Organizations and offices moving to a new station transfer all authorized files of maintenance publications and notify the Chief,

Field Services, Wright Field, of the date of transfer so that distribution may be arranged accordingly.

(3) Contractors supplying Army Air Forces material are furnished maintenance publications, except as noted in (4) below, only when it is to the best interest of the Government. In general, only one copy of each publication is furnished to a contractor. The contractor preparing manuscripts of handbooks for publication as technical orders is furnished, without request, two copies of the completed technical order together with two copies of all revisions pertaining thereto.

(4) Maintenance publications are distributed to military, diplomatic, and civil activities, and persons not specified herein when such distribution is approved by proper authority.

(5) Requests for technical orders to replace those worn out or lost, or for new files, etc., are submitted individually by each organization and office at a station on W. D., A. C. Form No. 102 (Requisition), in accordance with A. C. Circular 15-102. Such requisitions list the quantity, number, and abbreviated subject of each publication desired. In addition, adequate notes are attached to the requisition explaining the reason for requesting additional publications. All requisitions for publications are submitted through the station commander for approval, but do not have to be approved by the supply officer.

e. Accessibility of files.—It is important that each file be placed in a convenient location for ready reference by all the personnel concerned. It is particularly important that such information be available to the personnel charged with the maintenance of the equipment concerned.

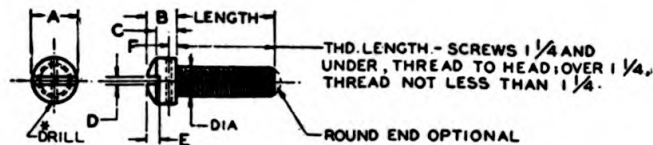
f. Tables for distribution.—Tables for the distribution of all maintenance publications are found in Technical Order 00-25-3.

22. Air Corps standards book.—*a.* The Air Corps standards book is distributed to Army Air Forces activities for information and guidance in connection with the classification, identification, and inspection of property. It is not a stock list. Only such parts as are necessary for the maintenance of existing aircraft are usually carried in Army Air Forces stock; therefore, the stock list should be used when ordering supplies.

b. The standards book is a tabulation of such parts as the Air Corps has selected as standard for aircraft construction. Typical standards book sheets are illustrated in figures 11 and 12.

(1) The parts indicated therein are not all carried in stock, but have been included to satisfy possible future demands in develop-

U. S. ARMY AIR CORPS, MATERIEL DIVISION, DAYTON, OHIO



SIZE	NOM. DIA.	BASIC P. DIA.	A	B	C	D	E	F	DRILL
0	.060	.0515	.096	.058	.038	.031	.027		
		.0017	.083	.041	.029	.020	.011		
1	.073	.0640	.118	.071	.046	.033	.031		
		.0018	.103	.052	.037	.022	.016		
2	.086	.0755	.140	.083	.055	.036	.037		
		.0019	.124	.063	.045	.024	.021		
3	.099	.0874	.161	.095	.063	.038	.043		
		.0020	.145	.073	.052	.026	.026		
4	.112	.0985	.183	.107	.072	.040	.048		
		.0022	.166	.084	.060	.028	.031		
5	.125	.1102	.205	.120	.081	.043	.054		
		.0023	.187	.095	.068	.031	.036		
6	.138	.1218	.226	.132	.089	.045	.060		
		.0024	.208	.105	.076	.033	.041		
8	.164	.1460	.270	.156	.106	.050	.071	3/64	#56(.046)
		.0025	.250	.126	.091	.037	.050		
10	.190	.1697	.313	.189	.123	.055	.083	3/64	#56(.046)
		.0027	.292	.143	.107	.041	.060		
12	.216	.1928	.357	.205	.141	.062	.094	3/64	#56(.046)
		.0029	.334	.169	.123	.045	.064		
1/4	.250	.2268	.414	.237	.163	.066	.109	1/16	#56(.046)
		.0031	.389	.197	.143	.051	.083		
5/16	.3125	.2854	.519	.297	.205	.077	.137	1/16	#50(.070)
		.0033	.490	.249	.181	.061	.106		
3/8	.375	.3479	.622	.355	.246	.088	.164	5/64	#50(.070)
		.0033	.590	.300	.218	.072	.129		

Inactive for design purposes.

DASH NUMBERS FOR PLAIN STEEL SCREWS - FOR DRILLED HEADS & BRASS SEE BELOW													
LGTH.	#0-80	#1-72	#2-64	#3-56	#4-48	#5-44	#6-40	#8-36	#10-32	#12-28	1/4-28	5/16-24	3/8-24
1/8	0-2	1-2											
3/16	0-3	1-3	2-3	3-3	4-3	5-3							
1/4	0-4	1-4	2-4	3-4	4-4	5-4	6-4	8-4	10-4				
5/16	0-5	1-5	2-5	3-5	4-5	5-5	6-5	8-5	10-5	12-5	416-5		
3/8	0-6	1-6	2-6	3-6	4-6	5-6	6-6	8-6	10-6	12-6	416-6		
7/16	0-7	1-7	2-7	3-7	4-7	5-7	6-7	8-7	10-7	12-7	416-7		
1/2	0-8	1-8	2-8	3-8	4-8	5-8	6-8	8-8	10-8	12-8	416-8	516-8	616-8
5/8	0-10	1-10	2-10	3-10	4-10	5-10	6-10	8-10	10-10	12-10	416-10	516-10	616-10
3/4	0-12	1-12	2-12	3-12	4-12	5-12	6-12	8-12	10-12	12-12	416-12	516-12	616-12
7/8	0-14	1-14	2-14	3-14	4-14	5-14	6-14	8-14	10-14	12-14	416-14	516-14	616-14
1	0-16	1-16	2-16	3-16	4-16	5-16	6-16	8-16	10-16	12-16	416-16	516-16	616-16
1 1/8					4-18	5-18	6-18	8-18	10-18	12-18	416-18	516-18	616-18
1 1/4					4-20	5-20	6-20	8-20	10-20	12-20	416-20	516-20	616-20
1 3/8					4-22	5-22	6-22	8-22	10-22	12-22	416-22	516-22	616-22
1 1/2					4-24	5-24	6-24	8-24	10-24	12-24	416-24	516-24	616-24
1 3/4					4-28	5-28	6-28	8-28	10-28	12-28	416-28	516-28	616-28
2					4-32	5-32	6-32	8-32	10-32	12-32	416-32	516-32	616-32
2 1/2									10-40	12-40	416-40	516-40	616-40
3									10-48	12-48	416-48	516-48	616-48

* ONLY WHEN SPECIFIED IN NAME & NUMBER

EXAMPLE OF PART NUMBER - 501-6-8 - PLAIN STEEL
 501A6-8 - DRILLED STEEL
 501B6-8 - PLAIN BRASS
 501AB6-8 - DRILLED BRASS

MATERIAL - STEEL SAE-1120 OR BETTER, BRASS SPEC. QQ-B-611
 FINISH - CADMIUM PLATE SPEC. 98-20006 STEEL SCREWS ONLY
 PACKING SPEC. 40560
 MANUFACTURING SPEC. PP-S-91

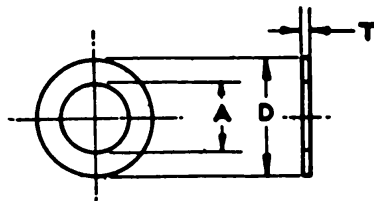
REMOVE SHARP EDGES FROM LOCK WIRE HOLES.

THREADS ARE NATL. SCREW THREAD CON. FREE FIT, CLASS 2, SYMBOL NF-2.

APPROVED	AIR CORPS STOCK CLASSIFICATION 29	
5-27-30	SCREW - FILL. HEAD, DRILLED OR PLAIN HEAD (FINE THREAD)	501

FIGURE 11.—Page of Air Corps standards book.

U. S. ARMY AIR CORPS. MATERIEL DIVISION. DAYTON. OHIO



D A S H N U M B E R S								BOLT SIZE	A	D	T
ALUM. ALLOY	STEEL-COR.RES. *LIGHT SERIES	REGULAR SERIES	BRASS	ALUMINUM *LIGHT SERIES	REGULAR SERIES	*STEEL-CARBON *LIGHT SERIES	REGULAR SERIES				
D3		C3	B3	A3L	A3		3	#3	7/64	1/4	1/64 1/32
D4		C4	B4	A4L	A4		4	#4	1/8	5/16	1/64 1/32
D6		C6	B6	A6L	A6		6	#6	9/64	3/8	1/64 1/32
D8		C8	B8	A8L	A8		8	#8	11/16	3/8	1/64 1/32
				A10L				#10	13/64	7/16	1/64 1/32
D10	C10L	C10	B10		A10	10L	10				1/16 1/32
				A16L				1/4	17/64	1/2	1/64 1/32
D16	C16L	C16	B16		A16	16L	16				1/16 1/32
				A516L				5/16	21/64	9/16	1/64 1/32
D516	C516L	C516	B516		A516	516L	516				1/16 1/32
				A616L				3/8	25/64	5/8	1/64 1/16
D616		C616	B616		A616		616				1/16 1/32
				A716L				7/16	29/64	3/4	1/64 1/16
D716		C716	B716		A716		716				1/16 1/32
				A816L				1/2	33/64	7/8	1/64 1/16
D816		C816	B816		A816		816				1/16 1/32
				A916L				9/16	37/64	1 1/16	1/64 1/16
D916		C916	B916		A916		916				1/16 1/32
				A1016L				5/8	41/64	1 3/16	1/64 1/16
D1016		C1016	B1016		A1016		1016				1/16 1/32
				A1216L				3/4	49/64	1 5/16	1/64 1/32
D1216		C1216	B1216		A1216		1216				1/16 1/32
				A1416L				7/8	57/64	1 1/2	1/64 1/32
D1416		C1416	B1416		A1416		1416				1/16 1/32
				A1616L				1	1 1/64	1 3/4	1/64 1/32
D1616		C1616	B1616		A1616		1616				1/16 1/32

+ HARD FINISHED SAE-1010 STEEL OPTIONAL

MUST BE FLAT AND FREE FROM BURRS

MATERIAL:

STEEL - AN-QQ-S-651 OR SAE-1010 STEEL - FINISH: CADMIUM PLATE SPEC. AN-QQ-P-421
 ALUMINUM - 57-151-1 - ANODIZE SPEC. 98-20005
 BRASS - QQ-B-611 - NONE
 COR. RES. STEEL - 57-136-9 - NONE
 ALUM. ALLOY - QQ-A-353 - ANODIZE SPEC. 98-20005

EXAMPLE OF PART NO. - AN960B10

PACKING SPEC. 40560

LIMITS ON DIMENSIONS ±.010 UNLESS OTHERWISE SPECIFIED

B/M

APPROVED	AIR CORPS STOCK CLASSIFICATION	OLIA	ARMY & NAVY STD.
3-22-26	WASHER - PLAIN		AN960

FIGURE 12.—Page of Air Corps standards book.

ment of aircraft and aircraft equipment. All persons preparing designs for the use of the Army Air Forces are required to use such standard articles as are listed in this book wherever it is practicable to do so. Compliance with this requirement is necessary in order properly to service equipment in the field with the least possible expense.

(2) When it is impossible properly to complete a structure without the use of a standard type bolt, screw, etc., of exceptional size or length not listed in this book, such part is considered a part of the article in which it was first used and assigned a major number the same as any other part of the mechanism. Such a part is not considered a standard utility until its application in various mechanisms requires that a stock be carried for general use.

c. (1) The large number in the lower right-hand corner of each sheet serves as a page number for arranging the book numerically and also as the major drawing and part number. These sheets are distributed separately as drawings when necessary, as there are no additional drawings of these parts.

(2) The number in the tabulation listed as "dash numbers" in conjunction with the page number serves to designate a particular part, so that in ordering parts, or on drawings, it is necessary to give the complete number as AN960-416 for a plain washer to fit a $\frac{1}{4}$ -inch bolt.

(3) The prefix "AN" on part numbers indicates standardization by the Army and Navy.

(4) The numbers in this book are coded to a certain extent. The code is simple and examples of part numbers are given on each sheet, as indicated in figures 11 and 12.

23. Drafting room manual.—*a. Purpose.*—(1) The drafting room manual contains detailed instructions relative to the preparation of standard Army Air Forces drawings. It is intended for the use of activities charged with the preparation of drawings used in connection with the procurement, production, and repair of equipment and material. Activities which maintain a drafting room should have a copy of this manual.

(2) This manual is prepared in loose-leaf form by the Matériel Division. When any changes are required, a new sheet including the changes is issued to all holders of a copy of the manual.

b. Description.—The drafting room manual contains briefly the following information:

(1) Drawing sizes, forms, and scales.

(2) Established practices for notes and dimensions.

- (3) Manufacturing processes and material notes.
- (4) Standardized design for machined elements.
- (5) Tolerances and limits for machined elements.
- (6) Threads and thread tolerances.
- (7) Material sizes and dimensions.
- (8) References to protective coatings and finishes.

SECTION IV

FORMS AND REPORTS

	Paragraph
Flight reports (W. D., A. A. F. Forms Nos. 1 and 1A)-----	24
Maintenance inspection records (W. D., A. C. Forms Nos. 41, 41A, and 41B) _	25
Flight Envelope (W. D., A. C. Form No. 9)-----	26
Invoice (W. D., A. C. Form No. 15)-----	27
Damage to Property Certificate (W. D., A. C. Form No. 17)-----	28
Clearance for Aircraft (W. D., A. C. Form No. 23)-----	29
Parachute Record (W. D., A. C. Form No. 46)-----	30
Work Order (W. D., A. C. Form No. 48)-----	31
Parts tags (W. D., A. C. Forms Nos. 49, 50, 51, 83, and 83A)-----	32
Unsatisfactory Report (W. D., A. C. Form No. 54)-----	33
Technical Order Compliance Report (W. D., A. C. Form No. 55)-----	34
Parachute Inspection and Drop-Test Card (W. D., A. C. Form No. 58)-----	35
Technical Instruction Compliance Record (W. D., A. C. Forms Nos. 60A and 60B)-----	36
Propeller Historical Record (W. D., A. C. Form No. 61)-----	37
Stores Charge (W. D., A. C. Form No. 81)-----	38
Stores Credit (W. D., A. C. Form No. 82)-----	39
Memorandum Receipt (W. D., A. C. Form No. 99)-----	40
Instruction Slip (W. D., A. C. Form No. 241)-----	41
Bill of Material (W. D., A. C. Form No. 243)-----	42
Stores Exchange (W. D., A. C. Form No. 249)-----	43
Inventory and Inspection Report (W. D., I. G. D. Form No. 1)-----	44
Report of Survey (W. D., A. G. O. Form No. 15)-----	45

24. Flight reports (W. D., A. A. F. Forms Nos. 1 and 1A).—
 (See A. A. F. Reg. 15-1.) *a. Purpose.*—(1) The purpose of flight report—operations (fig. 13 ①) is to provide operations officers with a report of each flight in an airplane or time in an instrument flying trainer for use in the maintenance of W. D., A. C. Form No. 5, the preparation of training program records, etc.

(2) The purpose of flight report—engineering (fig. 13 ②) is to provide the pilot before take-off with pertinent data relative to the servicing, inspection, and maintenance status of the airplane; to provide the mechanic with a convenient means of recording data required for transcription to W. D., A. C. Form No. 41 or W. D., A. C. Form No. 41B (Maintenance Inspection Record (Book Form));

FIGURE 13—Continued.

and by means of the stub to provide the Matériel Center with statistical data such as flying time by stations, organizations, airplanes, engines, etc.

b. Use.—These forms are used by all personnel involved in a flight in a U. S. Army airplane. When airplanes other than U. S. Army airplanes are flown by military personnel the Form No. 1 only is used, and this form is furnished the office of record responsible for keeping the flying time of the individual concerned.

c. Duties of mechanic in charge.—(1) To see that a pad of Forms Nos. 1 and 1A, with sharpened pencil attached, is kept in the holder in the airplane.

(2) To bring to the pilot's attention before take-off the entries on Form No. 1A, which indicate mechanical defects or delinquent inspections.

(3) To check quantities of fuel and oil in tanks before the first flight each day and after each servicing, and see that pertinent entries in columns on Form No. 1A conform.

(4) To prepare a new set of flight reports in the following instances:

(a) After the last flight of each day, provided all the necessary inspections, maintenance, and servicing work have been accomplished.

(b) In the event that the oil is changed before the last flight of the day, in order that the entry "Oil change due" on Form No. 1A will show the correct engine hours.

(c) In the event that the 25-hour, 50-hour, or 100-hour inspection is completed during the day.

(5) To add the flight time and enter the total under "Total flight time" on Form No. 1, initial and transcribe this total to "Total flight time" on stub attached to Form No. 1A.

(6) To remove the accomplished flight reports from the pad, prepare new forms in readiness for the next flight and forward accomplished Forms No. 1 to the operations office and Form No. 1A and attached stub to the engineering officer.

d. Entries by mechanic in charge.—(1) Make all entries at head of Form No. 1.

(2) Make all entries on stub attached to Form No. 1A.

(3) Make entries under heading "Airplane and engine time record" on Form No. 1A.

(a) For engines, the "Hours to date" are the hours since last overhaul.

(b) Engine time "Hours today" is the total flight time of that day as transcribed from Form No. 1.

(c) "Total" engine time is the sum of the entries "Hours to date" and "Hours today."

(d) "Oil change due" and "Cuno cleaning due" are the engine hours since overhaul at which these services are next due.

(e) For the airplane, "Hours to date" are transcribed when preparing a new Form No. 1A by entering the "Total airplane hours" from the previously accomplished Form No. 1A.

(f) Add the "Airplane hours today" to the "Hours to date" and enter the sum on line "Total." Then transcribe that entry to the next blank Form No. 1A on lines "Hours to date."

(4) Enter under heading "Inspection status" on Form No. 1A.

(a) Under "Date of or hours due":

1. Opposite "Preflight" enter date of last preflight from Form No. 41. If not made for current date, enter red dash.

2. Opposite "Daily" enter date of last daily inspection. If none are made on current date, enter red dash.

3. Opposite "25-, 50-, and 100-hours" enter airplane hours since depot inspection and repair at which these inspections are next due. The two blank lines provide for airplane hours at which other inspections may be due.

(b) Under "Inspected today": When an inspection is made on the current date of Form No. 1A and is not entered initially on Form No. 41 (as when the airplane is remote from the hangar or away from the home station) accomplish the entries "By" and "Station."

(5) Under heading "Status today" and "Explanation" on Form No. 1A enter appropriate symbol to indicate status of the airplanes; explain the condition if the status is indicated by a red symbol.

(6) Under the heading "Exceptional release" on Form No. 1A, if the "Status today" is indicated by a red symbol and the airplane has been released for flight, enter the authority for release.

(7) Under the heading "Servicing at station of take-off" on Form No. 1A:

(a) Enter each servicing of fuel and oil in columns "Serviced." Prior to the first flight of the day and after each servicing, check the fuel and oil and enter quantity "In tanks."

(b) The mechanic who services the airplane enters under "Remarks": "Serviced by-----."

(c) For liquid-cooled engines, at the time of each servicing, check the radiator and enter a check mark in column "Radiator checked."

(8) Enter under the heading "Remarks" on Form No. 1A such entries as are noted in the instructions printed on the form and such remarks and explanations which may be of value to the pilot or maintenance personnel.

e. Inspection by pilot.—Before take-off pilot inspects Form No. 1A and notes specifically—

(1) The “Inspection status” and “Status today.” When a red symbol is shown, pilot determines whether the airplane is safe for the contemplated flight and if so considered, signs the “Exceptional release.” An “Exceptional release” signed on Form No. 1A by a pilot is a valid release for flight by signer only.

(2) The engine hours at which oil change is due, and the engine hours at which Cuno strainer cleaning is due, and compare with the entries of engine “Hours to date.”

(3) The entries of “Servicing at station of take-off.” Note whether the airplane has been flown since the “In tanks” entries were made and that the fuel and oil in tanks are sufficient for the contemplated flight.

f. Entries by pilot on Form No. 1.—(1) In column 1 enter personnel classification code number and branch for each occupant.

(2) In column 2 print the surname first, then given name and initials and the rank of each occupant.

(a) For each occupant who is flying as a casual and is assigned or attached to an Army Air Forces organization other than that to which the airplane belongs, enter his organization number and type. If such casual is from another station, enter also the name of the station to which he is assigned or attached.

(b) For each occupant who is not a member of an air force component, enter his arm or service by usual Army abbreviation.

(3) Use column 3 as directed by local authority. Commanding officers may assign code numbers to each subject under the current training guide to facilitate maintaining operations office records of the status and progress of training.

(4) In columns 4, 5, 6, and 7—

(a) Under the heading “Duty,” enter the duty symbol indicating the crew position of each occupant at the take-off.

(b) Under *N* (night) or *I* (instrument) enter the pertinent symbol; these symbols are used only in combination with the duty symbol while flying at night or on instruments. Only the pilot actually at the controls is credited with instrument time. Concurrent night and instrument time is not taken by one individual.

(c) Under each duty symbol enter the flying time in hours and in minutes.

(d) If during the flight or series of flights any occupant changes his duty position, the new duty symbol is entered in the next column (5, 6, or 7).

(e) In making the pertinent entries in columns 4 to 7, inclusive, the sum of the flying time of each occupant must equal the total time of the flight or series of flights by that crew.

(5) In column 8 in the spaces "From" and "To," enter the places of take-off and landing. The word "local" may be used for a flight during which no stop was made away from the station of departure. Enter the number of landings and in the space "Mission" enter the mission symbol.

(6) In column 9 opposite the entry "From" and "To" enter the time of take-off and landing in terms of the 24-hour clock. On the line beneath enter the elapsed time of the flight in hours and minutes. Such time is entered to the nearest 5 minutes, except in civilian contract flying schools, when the time of instruction flights participated in by student and instructor is entered to the nearest minute.

g. After landing.—Where a series of flights are made by the same crew, the pilot adds the elapsed time of the various flights, draws a line under the last entry of elapsed time or the last flight of that crew, and enters the sum of the elapsed time of all flights by that crew. After landing, in the space for "Remarks" on Form No. 1A the pilot indicates OK, or if any defect or malfunctioning occurred, explains the trouble and signs his name and grade following the remarks.

h. Disposition.—Forms No. 1 are not removed from the pad unless the airplane is absent from the home station for a protracted period, in which case the forms are removed and mailed to the home station.

i. Engineering officer functions.—When the status of the airplane is indicated by a red dash or red diagonal, an engineering officer may release it for flight by signing the "Exceptional release" on Form No. 1A. Such release is effective for that calendar day only, unless additional defects are detected subsequently. The preferred procedure is to sign the "Exceptional release" on Form No. 41 or 41B. Unit engineering officers are responsible for seeing that—

(1) The accomplished Forms No. 1 are turned over to the operations office each day.

(2) The attached stub on Form No. 1A is sent to Budget Office, Wright Field, Dayton, Ohio.

(3) Form No. 1A is filed until inspected by the Army Air Forces technical supervisor, after which it may be destroyed.

j. Unit operations officers functions.—(1) Completed Forms No. 1 are turned in each working day to the officer charged with the maintenance of W. D., A. C. Form No. 5 (Individual Flight Record—H/A).

(2) Forms No. 1 are examined and audited for any omissions or errors and checked for legibility and correctness.

(3) Individual flight time of personnel on flying status is transcribed from Form No. 1 to Form No. 5.

(4) Form No. 1 is retained until inspected by an authorized representative of the Commanding General, Army Air Forces.

k. Reporting time on instrument flying trainer.—(1) Time on a modernized instrument flying trainer is reported by the officer in charge of the instrument flying trainer, using Form No. 1 as follows:

(a) Make all pertinent entries at the head of the form, entering "Link trainer" in the space for airplane model.

(b) In columns 1 and 2, make entries pertinent to the individuals who took training that day.

(c) In column 4, for each individual, enter the duty symbols P and I, and enter thereunder, for each individual, the time in hours and minutes.

(2) For each organization a separate Form No. 1 is used each day to report the instrument flying trainer time by personnel of that organization.

(3) At the end of each day the accomplished Forms No. 1 are forwarded to the pertinent operations officer.

l. Personnel class symbols.—(1) The symbols for personnel classes are as indicated on the inside cover of the pad of Forms No. 1, a reproduction of which is shown in figure 14.

(2) The various classes are divided into two major groups—indicated by affixing the letter C for commissioned personnel and the letter E for enlisted personnel to the proper symbol—thus Regular Army enlisted personnel are indicated by the symbol 1E. Commissioned reserves undergoing a 14-day period of training are indicated by the symbol 3C.

m. Duty symbols—organizations.—(1) P—Pilot. This symbol means that the individual was actually at the controls and flying the airplane during the specified time.

(2) CP—Copilot. This symbol means that the individual was at the copilot controls of an airplane for which a pilot and copilot are specified.

(3) C—Command pilot. This symbol is used by—

(a) The senior command pilot in any airplane for which pilot and copilot are authorized, when not commanding the airplane as pilot or copilot.

(b) Any command pilot directing the activities of a unit in the air while flying in any airplane in a capacity other than that of pilot or copilot.

(4) O—Observer. This symbol is used to indicate observer duty under any observer's rating.

FIGURE 14.—Symbols applicable to W. D., A. A. F. Forms Nos. 1 and 1A.

(5) OS—This symbol is used by personnel of other arms or services who do not hold a flying rating but are on flying status under AR 35-1480, and who are performing the flight duty as specified in their flying status orders.

(6) The remaining symbols are self-explanatory as printed on the inside cover of the pad of Forms No. 1.

(7) When an individual is performing two duties, the symbols are combined to indicate the concurrent duty, that is, BG for bombardier-gunner.

n. Duty symbols—Schools.—(1) *Pilotage schools.*—(a) S—Instructor. This symbol is used by instructors at pilotage schools to indicate that the flight was in connection with student instruction in compliance with a school curriculum.

(b) SD—This symbol is used by students undergoing pilot training and who, during the specified time, are receiving dual instruction.

(c) SP—This symbol is used by students undergoing pilot training and who, during the specified time, are flying alone.

(d) SC—This symbol is used by students undergoing pilot training and who, during the specified time, are acting as copilot for another student.

(2) *Other schools.*—The symbol S used in connection with the symbols B, E, F, G, H, O, R, W, and X indicates that the individual is a student in a nonpilot school and is receiving training in a specific duty such as: SB—Student undergoing training as a bombardier; SF—Student undergoing training as a photographer.

25. Maintenance inspection records (W. D., A. C. Forms Nos. 41, 41A, and 41B).—(See A. C. Technical Order 00-20A or TM 1-415.) *a.* All aircraft require frequent inspections, adjustments, and minor repairs while in active use. The recording, on forms, of the mechanical condition of an airplane provides engineers, technical inspectors, pilots, mechanics, and other personnel with data concerning the relative operating efficiency of an airplane and insures that airplanes are maintained in proper condition. The accomplished forms indicate the relative amount of maintenance work required by the airplane and the thoroughness with which this work is performed. In addition, the accomplished form provides a complete history of the operation and maintenance of the airplane during the period indicated.

b. Inspections are routine in nature and are performed in accordance with prescribed methods and pertinent instructions. They are accomplished at the periods established by A. C. Technical Order 00-20A, which are as follows:

- (1) Preflight.
- (2) Daily.
- (3) 25-hour.
- (4) 50-hour.
- (5) 100-hour.
- (6) 200-hour.
- (7) 300-hour.
- (8) Weekly.
- (9) Engine change.
- (10) 25-hour after engine change.

c. The forms used for recording these inspections are Forms Nos. 41, 41A, and 41B.

(1) Form No. 41 is used for recording data relative to the inspection status, results of inspections, mechanical condition of the aircraft, maintenance work performed, flying time, and supplies consumed. This form is mounted on a standard mounting board and placed in the hangar.

(2) Form No. 41A provides crew chiefs with a general outline of the inspection and maintenance work to be accomplished at the various inspection and maintenance periods. It is designed to be mounted on the same board as the Form No. 41 to which it pertains.

(3) Form No. 41B is used in place of Form No. 41 when the airplane is away from its home station for an extended period in field service or when, in the opinion of the commanding officer the use of Form No. 41 is impracticable. The authority to use Form No. 41B has been granted to all activities desiring to do so.

(4) Forms which provide information regarding the performance of routine inspections with a minimum of reference to other existing technical publications are also used. They consist of pamphlets for each model of airplane, and outline the minimum inspection and maintenance requirements. These forms are listed in section VII of A. C. Technical Order 00-1.

d. Complete information and instructions pertaining to Forms Nos. 41, 41A, and 41B may be found in A. C. Technical Order 00-20A or TM 1-415.

26. Flight Envelope (W. D., A. C. Form No. 9).—(See A. A. F. Reg. 15-9.) *a.* The flight envelope is carried by all aircraft departing from the home station on other than airdrome flights and contains the following items:

- (1) One pad of W. D., A. C. Forms No. 15 (Invoice).
- (2) Six W. D., A. C. Forms No. 17 (Damage to Property Certificate).
- (3) Twelve Government telegram forms.

- (4) Six sheets of blank paper, letter size.
- (5) Three penalty envelopes.
- (6) One indelible pencil.
- (7) One copy, AR 95-120.
- (8) One copy, A. C. Technical Order 01-1-31.
- (9) One copy, A. C. Circular 15-15.
- (10) One copy, A. C. Circular, 65-23.
- (11) One copy, A. C. Circular 55-12.
- (12) One protractor.
- (13) One standard map of the United States on a scale of approximately 80 miles to the inch, except that aircraft operating outside the continental limits of the United States carry in lieu thereof a suitable map of the surrounding country over which aerial flights are required.

b. Each flight envelope is sealed by a paper or suitable cloth label which bears substantially the following information, amended as required to meet the needs of each activity:

Flight Envelope Number 1 * * * If found please return to Station Operations Officer CHANUTE FIELD, ILL. * * * THIS LABEL NOT TO BE TORN OR REMOVED UNLESS NECESSARY TO USE OR CHANGE CONTENTS
--

c. Flight envelopes are issued in either of the following manners, as prescribed by the local commanding officer:

(1) Issued by the operations officer to the pilot on memorandum receipt, together with a clearance authorizing the pilot's departure for a specific flight. Upon completion of the flight, the pilot returns the flight envelope to the proper operations officer who returns the envelope to the file if the label is unbroken or, if the label is broken, checks the contents, replaces missing items, reseals the envelope and returns it to the file.

(2) Issued permanently to an airplane, in which case it is included among the items to be inspected daily by the crew chief. If the crew chief discovers a broken seal, he returns the envelope immediately to the proper operations office and obtains a sealed envelope, which is placed in the airplane.

27. Invoice (W. D., A. C. Form No. 15).—(See A. C. Circular 15-15.) *a. Purpose.*—The invoice (fig. 15), is used by personnel con-

WAR DEPARTMENT
AIR CORPS
Form No. 15
(Revised June 26, 1940)

WAR DEPARTMENT
AIR CORPS

INVOICE

Date August 11, 1941

THE UNITED STATES, Dc.

To Pennsylvania-Central Airlines Corporation

Address Allegheny County Airport, Pittsburg, Pennsylvania

(Write plainly name and address of firm or individual from whom supplies or services were obtained)

Airplane No.	ARTICLES OR SERVICES	Quantity	Unit	Unit Price	Total
37-641	90 Octane Gasoline	200	gal	0 285	57 00
37-641	Aviation 60 Oil	24	qts	0 34	8 16
TOTAL					65 16

State tax (.0003 per gal.) ~~is~~ (is not) included.

Local tax (..... per gal.) ~~is~~ (is not) included.

Federal tax ~~is~~ (is not) included.

Note.—Always insert unit tax for fuel and oil. Cross out references not applicable.

I CERTIFY that the above articles are for the exclusive use of the United States and have been received by me in good condition, in quality or quantity, or services performed as stated; and that this purchase was necessary because the supplies could not be secured at a Government station.

I FURTHER CERTIFY that this flight was authorized per:

..... Special Orders No. 188, Paragraph 10, Dated August 11, 1941

Name S. P. Jones Rank Major A. C.

Station Chanute Field, Rantoul, Illinois

VENDOR'S CERTIFICATE

I CERTIFY that the above bill is correct and just; that payment therefor has not been received; that except as otherwise noted all of the articles, materials, and supplies furnished under Purchase Order No. if unmanufactured articles, materials, and supplies, have been mined or produced in the United States, and if manufactured articles, materials, and supplies, they have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States.

I CERTIFY that tank wagon (or barge, service station, etc.) price, at date and point of delivery, is as stated herein.

Name of firm Pennsylvania-Central Airlines Corporation

By William Brown
(Signature of authorized representative)

Title Supervisor of Accounts Receivable

U. S. GOVERNMENT PRINTING OFFICE 16-6126

FIGURE 15.—Invoice (W. D., A. C. Form No. 15).

WAR DEPARTMENT
AIR CORPS
FORM NO. 17
(Approved June 14, 1937)

WAR DEPARTMENT
AIR CORPS

DAMAGE TO PROPERTY CERTIFICATE

(Address of owner or tenant)

(Date)

I hereby agree that the landing on my premises, on the above date, of Army Airplane No. _____
from _____ resulted in no financial damage whatsoever to my property.

(Signature of pilot)

(Signature of owner or tenant)

R.F.D. #1

(Address of owner or tenant)

Parton, Illinois

October 21, 1941

(Date)

I hereby agree that the landing on my premises, on the above date, of Army Airplane No. AL 39-721
from Chanute Field, Rantoul, Illinois caused the following estimated damage:

Demolished 3 fence posts and 100 feet of wire fence:	
Estimated cost of replacement:	
Posts @ 60¢ ea.	\$ 1.80
Wire @ 10¢ per ft.	10.00
Out down and ruined a crop of growing	
soy beans over an area of two acres.	
Estimated loss 40 bushels, \$1.00 per bu.	40.00
Labor 6 hrs. 50¢ per hr.	3.00
Total damage	<u>\$54.80</u>

Robert English
(Signature of pilot)
ROBERT ENGLISH, 1st Lt., Air Corps.

James Black
(Signature of owner or tenant)
JAMES BLACK, Owner

(See instructions on back)

6-2876

FIGURE 16.—Damage to Property Certificate (W. D., A. C. Form No. 17).

cerned, to invoice all emergency procurements of services and supplies as given in *b* below.

b. Preparation.—The form is prepared in quadruplicate, using indelible pencil, ink, or typewriter.

(1) Separate invoices are prepared for each of the following classes of purchases:

(a) Fuel, lubricating oil, grease, etc.

(b) Services and miscellaneous materials and supplies.

(2) Under the decision of the Supreme Court of the United States, Government automotive vehicles traveling on official business are not subject to State or local taxes on motor fuels, lubricants, and anti-freeze liquids. This decision also applies to Government-owned aircraft. Invoices covering the purchase of such items must have the purchase price and the amount of State or local tax recorded as separate entries. The tax rate per unit must be entered in the spaces provided.

(3) All copies of the forms covering the procurement of supplies and services are signed by the individual procuring the material and by the dealer on the bottom of the form in the space provided. The quadruplicate copy is retained by the dealer at the time of procurement. The original and first two copies are then mailed immediately by the individual procuring the supplies or services to the Army Air Forces supply officer of the home station of the aircraft, except in the case of aircraft being transferred (with accountability), when they are mailed to the supply officer of the station to which the aircraft is being delivered.

(4) In case a wreck or other circumstances en route prevent delivery to the destination, the original and two copies are returned to the home station. In cases where an aircraft, accepted for fly-away at a contractor's plant, is wrecked, or delivery to the destination is prevented by other circumstances, the original and two copies are forwarded to the contracting officer, Wright Field, Dayton, Ohio. In cases of aircraft that have been loaned, the receiving station functions as the home station.

28. Damage to Property Certificate (W. D., A. C. Form No. 17).—(See reverse side of Form No. 17.) *a. Purpose.*—This form (figure 16) is accomplished in all cases of landing on private property where permission has not been previously granted by the owner for such landing, and where private property was damaged by landing. If property was damaged, the nature of the damage and the estimated value are stated on the form. Where the estimate of the owner or tenant does not agree with the estimate of the pilot, both estimates appear on the form.

WAR DEPARTMENT
Air Corps
Form No. 28
(Revised Jan. 27, 1941)

AIRCRAFT CLEARANCE

(Pilot will complete necessary data on solid lines only)

Flight Identification
No. 3 XU

OPERATIONS OFFICE CHANUTE FIELD DATE 11-4-41

ADDRESS 54

AT-9 (Airplane model) 1-5746 (Serial number) PK (Home station)

NAME AND RANK OF CREW AND OTHER OCCUPANTS

1. Lt. Irons 6. _____

2. Lt. Roe 7. _____

3. _____ 8. _____

4. _____ 9. _____

To PK via DRCT at CFR (Route) (Altitude)

To _____ via _____ at _____ (Route) (Altitude)

To Patterson Field via 160 at 4495 (Route) (Altitude)

10:15 (Proposed take-off time) 1:50 (Estimated time en route) 5 (Hours of fuel aboard)

ke 4495 (Transmitting frequency) ke (Transmitting frequency) ke (Transmitting frequency)

Receiver only ☐ No radio ☐

REMARKS: _____

(Alternate airport—for instrument flight only)

Thorough consideration has been given by the pilot to the NECESSARY MAPS, EMERGENCY EQUIPMENT, NOTICES TO AIRMEN, and WEATHER CONDITIONS affecting the proposed flight. The pilot is familiar with local flight rules and regulations and those of the Civil Aeronautics Administration.

WEATHER: C ☒ N ☐ FORECAST FOR ROUTE (E. T. E. plus two hours): Unlimited becoming overcast
with ceiling 6000-7000 feet Indianapolis to Patterson. Visibility 3-6 miles with
steady improvement except 3-4 in smoke in vicinity of large cities.

WINDS ALOFT: _____ at _____; _____ at _____; _____ at _____
(Best altitude + 2,000 feet) (Best altitude) (Best altitude - 2,000 feet)

M. Stelber (Signature of weatherman) C. J. Irons (Signature of pilot) ☒ Command pilot ☐ Senior pilot ☐ Pilot

Flight plan submitted to: _____ (Control station) _____ (Time) Clearance authority (not required for command and senior pilots)

Approval received: _____ (Time) _____ (Signature)

Take-off reported by: _____ (Crewman) To _____ (Operations) Clearance officer—Operations officer, (not required for command and senior pilots)

Take-off _____ (Time) Message sent by: _____ (Time)

DEPARTURE RECORD

(Pilot) _____
(Time and date of departure) _____
(Airplane model and service number) _____
(Line crewman's signature)

This Departure Record will be given to the pilot who in turn will give it to the line crewman. The line crewman will complete and deliver to operations officer.

① Aircraft Clearance.

FIGURE 17.—W. D., A. C. Form No. 23.

b. Preparation.—The form is prepared in duplicate; one copy is retained by the owner and the other copy is forwarded to the operations officer of the home station of the airplane.

29. Clearance for Aircraft (W. D., A. C. Form No. 23).—(See A. A. F. Reg. 15-23.)—*a. Purpose.*—The clearance for aircraft consists of two parts: aircraft clearance and departure and arrival report. (See fig. 17.) This form is used by all Army Air Forces activities to clear pilots leaving their airdromes on cross-country flights and for local flights when weather conditions require an instrument clearance.

WAR DEPARTMENT
AIR CORPS
Form No. 23
(Revised Jan. 27, 1931)

DEPARTURE AND ARRIVAL REPORT

(Pilot will complete necessary data on solid lines only)

Flight Identification

No. 3 NV

OPERATIONS OFFICE CHANUTE FIELD DATE 11-4-41

ADDRESS 54

AT-9 (Airplane model) 1-5746 (Serial number) PK (Home station)

NAME AND RANK OF CREW AND OTHER OCCUPANTS

1. Lt. Irons 2. Lt. Roe 3. 4. 5. 6. 7. 8. 9.

To PK via DROT at CTR (Route) (Altitude)

To via at (Route) (Altitude)

Patterson Field (Destination) 160 (Air speed) 4495 (Transmitting frequency)

10:15 (Proposed take-off time) 1:50 (Estimated time on route) 5 (Hours of fuel aboard)

Receiver only ☐ No radio ☐ REMARKS:

(Alternate airport—for instrument flight only)

Thorough consideration has been given by the pilot to the NECESSARY MAPS, EMERGENCY EQUIPMENT, NOTICES TO AIRMEN, and WEATHER CONDITIONS affecting the proposed flight. The pilot is familiar with local flight rules and regulations and those of the Civil Aeronautics Administration.

WEATHER: ☒ S ☐ N ☐ FORECAST FOR ROUTE (E. T. E. plus two hours): Unlimited becoming overcast
with ceiling 6000-7000 feet Indianapolis to Patterson. Visibility 3-6 miles with
steady improvement except 3-4 in smoke in vicinity of large cities.

WINDS ALOFT: at (Best altitude—2,000 feet); at (Best altitude); at (Best altitude—2,000 feet)

M. Halber (Signature of weatherman) C. S. Irons (Signature of pilot) ☒ Command pilot ☐ Senior pilot ☐ Pilot

Flight plan submitted to: (Control station) (Time) Clearance authority (not required for command and senior pilots)

Approval received: (Time) (Signature)

Take-off reported by: (Clearance) To (Operations) Clearance officer—Operations officer, (not required for command and senior pilots)

Take-off (Time) Message sent by: (Time)

ARRIVAL RECORD: (Time and date of arrival) (Line crewman's signature)

(Stations to be notified) (Desired time and date of departure)

(Next intended stop) ☐ Gasoline ☐ Oil (Services required)

(Where pilot can be reached at this station)

THIS COPY TO BE GIVEN TO PILOT. Pilot will complete "Arrival Record" and present to line crewman meeting the arriving airplane; for his information. Line crewman will then forward immediately to the operations office. Home station will be notified in the event of an overnight stop.

16-50846

③ Departure and Arrival Report.

FIGURE 17.—W. D., A. C. Form No 23—Continued.

(1) Flight rules and weather minimums as determined by the Civil Aeronautics Board, Department of Commerce, apply in the preparation of the form.

(2) Detailed weather reports on forms reproduced locally are available at each weather office when requested by pilots.

b. Clearance authority.—Command pilots and senior pilots are authorized to sign clearances for their respective flights, individual or unit, as clearance authority. Pilots are cleared by the commanding officer or his authorized representatives at the Army Air Forces station concerned.

c. Radio clearance.—All practical provisions regarding the use of the clearance form apply, and the form accomplished by operations office is retained for record. In addition the pilot furnishes the exact number of hours for which the remaining fuel will permit flight at cruising consumption.

d. Disposition.—The original (aircraft clearance) is retained in the operations office of the station of departure, but is destroyed at the expiration of 1 year, provided it has been examined by a technical supervisor. The duplicate (departure and arrival report) when received by an operations office is retained in the file for 3 months after the effective date, at which time it may be destroyed.

30. Parachute Record (W. D., A. C. Form No. 46).—(See A. C. Circular 15-46.) *a. Purpose.*—A parachute record card (fig. 18) is used as a maintenance, repair, inspection, and historical record of each parachute. This form is maintained under the direction of the officer in charge of parachutes at all activities where parachutes are used or stored, and in the case of detached individuals, or activities which do not have facilities for parachute maintenance, the forms are maintained by the activity designated to maintain the parachutes. In the latter case, the parachute officer responsible for maintaining the parachutes forwards notification to such detached individuals prior to the dates on which the parachutes require repacking and drop testing and files a copy of such notification with the parachute record until the next visit of the technical supervisor.

b. Preparation.—The face of this form is prepared as follows:

(1) *Heading.*—Enter name of station, type, A. C. serial number, and date of manufacture of parachute.

(2) *Location (columns "Date" and "Activity or individual").*—

(a) Enter the date of issue and the name and grade of the individual or the name of the organization to which issued.

(b) If the parachute is not issued, its status is shown as "in storage," "in parachute department" (awaiting or undergoing repair), "beyond repair" (awaiting survey or inventory and inspection).

(3) *Inspected and repacked (columns "Date" and "By")*.—When the parachute is inspected and repacked the individual performing this operation enters his initials and the date.

(4) *Date last drop test*.—In this column enter the actual date of the drop test.

(5) *Date last depot overhaul*.—Enter the date of completion of depot overhaul in this column. This entry is accomplished by the depot only.

(6) *Remarks*.—In this column enter any portion of the following information which is pertinent to the particular parachute:

(a) Description of all repairs and replacements.

(b) Description of any serious defects or troubles.

(c) If a routine inspection or repacking, drop test, or overhaul is not accomplished when required, show the cause for such delinquency.

(d) When accountability is not carried by the activity maintaining Form No. 46, the name of the accountable activity is entered.

(e) When accountability is transferred, the authority for such transfer is entered.

(f) When the parachute is used for an emergency jump, the name of the jumper and date are entered.

(g) When a report of survey or inventory and inspection report is submitted, the date of such report and name of the station are entered.

(h) If the parachute has been in an aircraft accident, a statement of the circumstances, including the date of the accident, is entered.

(7) *One line for each entry*.—When a line is used for an entry in any column, no part of that line is used for entry in another column, except date or remarks pertaining to the original entry. Thus, each remark applies to the pertinent data on that line. For example, if the entry under "Location" reads "8-20-38-F. A. D." on the same line, under "Remarks," the entry would read "For overhaul," followed by a reference to authority.

(8) *New pages*.—If the spaces under any one of the headings are exhausted, a new form is prepared which constitutes an added page and the entries continued thereon. Completed pages are securely stapled together, and then loosely clipped to the active page.

c. *Technical compliance record*.—On the reverse side of the form a technical instruction compliance record is maintained as follows:

(1) *Date and number*.—This indicates the date and number of each technical order or other technical instruction directing specific changes, one-time inspections, or other work pertaining to the particular parachute.

(2) *Title*.—This column indicates the title of such technical instruction.

TECHNICAL INSTRUCTION COMPLIANCE RECORD

...the routine tests in accordance with T. O. No. 13-6-27

U. S. GOVERNMENT PRINTING OFFICE 1-6089

② Back.

FIGURE 18.—Parachute Record (W. D., A. C. Form No. 46).

(3) *Completed*.—This column indicates the date of compliance with the technical instruction and the name of the individual accomplishing the changes, inspections, or other work directed.

(4) *Insp. by*.—The initial of the individual who inspected and approved the accomplished work are placed in this column.

(5) *Station*.—This column indicates the name of the station at which the work was accomplished.

(6) *Remarks*.—An explanation of any delays, such as the lack of parts or facilities and pertinent remarks are indicated in this column.

d. Filing, routing, and disposition.—(1) These forms are filed in numerical order according to parachute serial number.

(2) When a parachute is ordered shipped to another station, W. D., A. C. Form No. 46 pertaining to that parachute is turned over to the accountable officer who forwards it to the receiving activity as an attachment to the shipping ticket.

(3) Activities receiving a parachute without its corresponding parachute record immediately request this form from the shipping station and withhold such parachute until the parachute record is received.

(4) Activities receiving a parachute without information as to the shipper should at once report this incident to the Air Service Command, stating the serial number of the parachute and circumstances pertaining to its receipt.

(5) Parachute record cards are inspected by the Air Corps technical supervisor during the regular inspection of each Air Corps station.

(6) Parachute record cards which indicate the final disposition of a parachute by an approved report of survey or inventory and inspection report are maintained at the last station and are destroyed only after inspection of the same and approval by an Army Air Forces technical supervisor.

31. Work Order (W. D., A. C. Form No. 48).—(See A. C. Circular 15-48.) *a. General*.—The work order (fig. 19) is used for requesting and authorizing work in engineering departments of Army Air Forces depots and may also be used for the same purpose by air bases. These instructions apply specifically to air bases.

(1) The form may be initiated by any organization or department of a station or depot to request the performance in the engineering department of any type of work except manufacture. In the case of manufacture, the form is initiated by the depot or station supply office. All work orders initiated by departments other than supply are submitted to the supply office for approval and entering of the account symbol and work order number, prior to submission to the engineering

WAR DEPARTMENT
AIR CORPS
Form No. 48
(Revised May 9, 1941)

WORK ORDER

Work Order No. 41-10-80
Account Symbol UN
Date 10/9/41 Property class 17-A
Station Chanute Field, Rantoul, Illinois.
Initiating organization 25th School Sqdn.
Signature John Brown, 1st Lt., Air Corps Date wanted 10/22/41
To Base Engineering For accomplishment of the following:
Overhaul Remarks: Work Bench as per attached drawing No. 41-100.
Repair Manufacture X

QUANTITY	UNIT	STOCK No.	PART No.	NAME
2	ea			Work bench.

To Foreman of Sheet Metal Shop Coordinated C. B. Smith, Capt., A. C.
Date started 10-24-41 (Supply officer)
Date completed 10-30-41 Approved C. N. Rudolph, Capt., A. C.
(Engineering officer)
A. P. Clark Foreman. (Commanding officer)

U. S. GOVERNMENT PRINTING OFFICE 16-22388

FIGURE 19.—Work order (W. D., A. C. Form No. 48).

department, except those initiated by the engineering department pertaining to work performed on installed shop equipment, ordinarily referred to as shop maintenance). Work orders initiated by other than Air Corps organizations, are forwarded through the Army Air Forces supply office to the commanding officer for approval, prior to submission to the engineering office.

(2) Separate work orders are issued for each job, article, or quantity of articles of identical construction in order to obtain individual unit costs of the work involved. In no case is work chargeable to more than one account symbol included on the same work order.

b. Entries.—The following entries are made on the form at the time of preparation:

(1) Date.

(2) Name of depot or station.

(3) Name of the originating department or organization.

(4) When prepared in the engineering department, the account symbol, as determined by Air Corps Circular 65-4, the work order number, the signature of the engineering officer, and the name of the branch or unit under his jurisdiction in which the work is to be performed.

(5) A description of the work to be performed.

(6) The property class, if the work involves the manufacture or repair of Army Air Forces property, other than aircraft or engines.

(7) The desired date of completion.

(8) The signature of the originating department head in the space provided in the heading, if originated in other than the engineering department.

(9) The quantity, unit, part number, if any, and name of the article to be manufactured, repaired, etc.

c. Disposition.—(1) Work orders initiated by base engineering departments applying to shop maintenance and overhead are prepared in quadruplicate.

(a) The original, duplicate, and triplicate are forwarded to the foreman designated to accomplish the work, while the quadruplicate is retained in the engineering office.

(b) When the work is started, the foreman enters the date in the space provided on the original, duplicate, and triplicate copies. He then signs and forwards the duplicate to the engineering office.

(c) When the work is completed, the foreman enters on the original the date of completion, then signs and forwards it to the engineering office for file. The foreman retains the triplicate copy.

(2) Work orders initiated at air bases by other than the engineering departments are prepared in quintuple form.

(a) The original and three copies are forwarded to the supply office for approval and the entering of the account symbol and work order number. The supply officer forwards them to the engineering office for approval and the entering of the name of the branch or unit in which the work is to be accomplished. The engineering office then handles them in the manner explained in (1) (c) above.

(b) When either the supply or engineering office disapproves the work order, all copies are returned to the initiator with a written statement of the reasons for such action.

32. Parts tags (W. D., A. C. Forms Nos. 49, 50, 51, 83, and 83A).—(See A. C. Circular 15-50.) *a. General.*—The Army Air Forces system of maintenance requires that all Army Air Forces parts or assemblies which are not installed on equipment be properly identified through the use of authorized tags. The following tags are used for this purpose:

Form No. 49 (Serviceable Part Tag) (fig. 20①).

Form No. 50 (Reparable Part Routing Tag) (fig. 20②).

Form No. 51 (Condemned Part Tag) (fig. 20③).

Form No. 83 (Identification Tag) (fig. 20④).

Form No. 83A (Identification Tag for Unsatisfactory Report Exhibits) (similar to Form No. 83).

FORM NO. 49 SERVICEABLE PART TAG

EQUIPMENT: NAME _____ TYPE _____ A. C. NO. _____

PART NAME _____ PART NO. _____

REMARKS: _____

SIGNATURE OF INSPECTOR _____

DATE _____

SERVICEABLE

YELLOW

① Serviceable Part Tag (W. D., A. C. Form No. 49).

FIGURE 20.—Parts tags.

FORM NO. 50 REPARABLE PART ROUTING TAG		REPARABLE
EQUIPMENT: NAME _____	TYPE _____ A.C. NO. _____	
PART NAME _____	PART NO. _____	
INSTRUCTIONS FOR REPAIR: _____		

DATE _____	(SIGNATURE) _____	

GREEN

② Reparable Part Routing Tag (W. D., A. C. Form No. 50).

FORM NO. 51		CONDEMNED PART TAG	CONDEMNED
EQUIPMENT: NAME _____	TYPE _____	A.C. NO. _____	
PART NAME _____	PART NO. _____		
REMARKS: _____			

SIGNATURE OF INSECTOR _____			
DATE _____			

RED

③ Condemned Part Tag (W. D., A. C. Form No. 51).

FORM NO. 83		IDENTIFICATION TAG	IDENTIFICATION
EQUIPMENT, NAME _____	TYPE _____	A.C. NO. _____	
PART NAME _____	PART NO. _____		
REMARKS: _____			

DATE _____		SIGNATURE _____	

WHITE

④ Identification Tag (W. D., A. C. Form No. 83).

FIGURE 20.—Parts tags—Continued.

(1) The condition of parts or assemblies on hand in the Army Air Forces which are not installed on equipment, is indicated by individual tagging, by placing in tagged containers, or by storing in stockrooms or warehouses assigned to contain serviceable, reparable, or condemned property. Small parts may be strung or wired together and tagged in groups if desired. Assemblies which require special calibration, test, or inspection, are tagged individually following repair, testing, or inspection. Ignition devices, generators, starters, storage batteries, carburetors, fuel pumps, and instruments are examples of this type of assembly.

(2) Parts removed from aircraft for the purpose of obtaining accessibility to some other part in need of repair, and which are to be immediately reinstalled, do not require tagging, unless their condition is questioned by an inspector or there is a possibility of losing their identity, so far as the equipment to which they belong is concerned. Parts or assemblies are not transported from one department to another unless properly tagged.

b. Serviceable part tag (Form No. 49).—The serviceable part tag is attached to all parts or assemblies that are serviceable.

(1) These tags may be attached to and removed from parts and assemblies by inspectors only. When removed, the tags are destroyed, except where it is desired to retain them as a historical record for the information of the engineering officer or chief inspector.

(2) These tags are never removed except when the parts or assemblies to which they are attached are installed on equipment, or when the tags are replaced by the reparable part routing tag (Form No. 50) or condemned part tag (Form No. 51).

(3) New parts or assemblies received from manufacturers are not tagged with serviceable part tags until they are thoroughly inspected and known to be serviceable.

c. Reparable part routing tag (Form No. 50).—The reparable part routing tag is used to indicate all parts or assemblies that are reparable. These tags are attached to and removed from parts or assemblies by foremen, subforemen, inspectors, or such other persons as are authorized by the engineering officer or chief inspector. When removed, they are replaced with a serviceable part tag (Form No. 49) or a condemned part tag (Form No. 51) except when the tag is used as provided in (3) below.

(1) When reparable engines are removed from aircraft for return to a repair activity for overhaul, a reparable part routing tag is attached, which indicates the total flying time since the preceding

overhaul, and the date and place of removal of the engine. Unless the engine is disposed of prior to overhaul, this tag remains on the engine until the flying time is stamped on the crankcase as required by technical orders, at which time it may be removed and destroyed.

(2) On the reverse side of the reparable part routing tag are spaces for indicating the routing of reparable parts through the Engineering Department. This routing is indicated by the use of symbols (letters or numbers) assigned by the engineering officer, each department, subdepartment, and stockroom receiving a symbol. When reparable parts have been delivered to a department for a repair operation and have been completed so far as that department is concerned, the foreman or inspector signs the tag in the space provided after the symbol indicating his department and forwards the part to the next department indicated. When the work is completed on the part or assembly and it is to be delivered to a stockroom, the inspector removes the reparable part routing tag and attaches the serviceable part tag.

(3) When the repair work is completed and the routing indicates that the part is to be delivered to the aircraft or engine from which it was removed, rather than a stockroom, a serviceable part tag is not required. The foreman or inspector, however, signs the reparable part routing tag in the usual manner and forwards the part or assembly directly to the department indicated thereon. Workmen engaged in the assembly of the aircraft or engine remove and destroy the tags as the parts are installed, except where it is desired to retain these tags as a historical record, in which case they are subject to instructions issued by the engineering officer or chief inspector.

(4) When reparable parts or assemblies that have been removed from equipment are not interchangeable, they are returned, upon completion of the necessary repairs, to the aircraft or engine from which they were removed. Such parts are tagged with the reparable part routing tag plainly marked with the word "Noninterchangeable." The routing on the tag indicates the final return of the parts or assemblies to the department in which they are to be used. If for any reason it is desired to retain noninterchangeable parts in the stockroom until they are required in the assembly of the aircraft or engine from which removed, they are tagged with an identification tag (Form No. 83) which indicates the identity of the equipment upon which the parts will later be used, and the parts thus identified are turned in to the stockroom.

d. Condemned part tag (Form No. 51).—The condemned part tag is used to tag all parts or assemblies that are obsolete or damaged

beyond repair; except that parts damaged to such an extent that they are obviously beyond repair do not require condemned part tags. Containers used for condemned parts are also conspicuously marked. All condemned parts or assemblies which are not usually placed in containers are tagged separately, except where the cause for rejection is obvious and there is not a possibility that the part will be mistaken for a serviceable or reparable item. A complete assembly may be condemned but may contain parts which are reparable or serviceable. Therefore, the condemned part tag attached to such an assembly should indicate this fact. These tags are attached to and removed from parts and assemblies by inspectors only.

e. Identification tag (Form No. 83).—The identification tag is used to indicate the identity or reservation of: parts or assemblies for installation on a particular aircraft or engine; stock to be used in the accomplishment of a particular work order; material to be shipped; or parts, assemblies, or material retained for exhibits, except those covered by unsatisfactory reports. Identification tags are attached to parts and assemblies by authorized personnel only and may be removed by workmen when such parts or assemblies are installed on the equipment for which they were designated.

f. Identification tag for unsatisfactory report exhibits (Form No. 83A).—This tag is used for identifying parts or materials on which unsatisfactory reports (Form No. 54) are submitted. All parts that are submitted as exhibits to, or that are retained pending action on unsatisfactory reports, are identified with this tag in addition to the tags normally used to indicate the condition of the parts. The tags are conspicuously marked with the letters "U. R.," and contain spaces for entering the name of the station and the serial number of the unsatisfactory report.

33. Unsatisfactory Report (W. D., A. C. Form No. 54).—(See A. C. Circular 15-54.) *a. General.*—(1) An unsatisfactory report (fig. 21) is submitted when any of the following defects occur or are recognized:

- (a) Failure or malfunctioning of any item of Government material or equipment used by the Army Air Forces.
- (b) Unsatisfactory design.
- (c) Defects due to faulty material, workmanship, or inspection.
- (d) Unsatisfactory systems, forms, or methods.
- (e) Damage in shipping, when due to faulty packing or crating.
- (f) When an airplane is held out of commission longer than 10 days for lack of parts or supplies, except in cases when advised of a scheduled shipping date beyond the 10-day limit.

(2) Where an emergency requires such action, radio or telegraphic reports may be submitted. However, such a report must be followed by an unsatisfactory report.

(3) An exception is made in the case of stock commercial model airplanes and engines, where it is known that many parts and assemblies, such as hose, hose clamps, pulleys, switches, pumps, etc., do not conform to the airplane designers handbook or specification standards. Such nonconformity is not reported. However, failures, defects, or malfunctions are reported.

WAR DEPARTMENT
AIR CORPS
Form No. 54
(Revised September 11, 1930)

WAR DEPARTMENT
AIR CORPS

Mat'l Div _____
Serial No. _____

UNSATISFACTORY REPORT
(See A. C. Cir. 15-54)

Station Serial No. 41-26 Date May 27, 1941
Station Chanute Field Organization Station Engineering
Name, type and ser. no. of equipment Airplane O-47A, A.C. #37-263
Name and part no. of defective part Line Assy. Hydraulic Engine Pump, Flexible Part No. 25-58113-2.

DESCRIPTION OF TROUBLE:

2-10928

1. a. O-47A Airplane A.C. No. 37-263
b. R-1820-49 Engine A.C. No. 37-557
c. d. e. Never had D.I.R.
f. Total flying time 994:55
2. The connection came loose from flexible hose allowing loss of hydraulic fluid and causing the working of flaps and landing gear to be inoperative.
3. As this is the second failure within a few weeks it is believed that the line is defective and fails under a load it should carry.
4. Defective line is being forwarded under separate cover for your inspection.

James A. Watt
James A. Watt
1st Lt., Air Corps
Station Engineering Officer

FIGURE 21.—Unsatisfactory Report (W. D., A. C. Form No. 54).

(4) When purchase orders specify inspection at destination, rejections are reported on the W. D., Q. M. C. Form No. 431 (Receiving Report (Posts, Camps, and Stations)).

b. Data required.—On the line entitled "Station," the name of the home station of the organization submitting the report is entered. On the line entitled "Name, type, and serial No. of equipment," precede the description by the property class number. Station serial numbers are assigned by the station engineering officer, with all the

reports from the station numbered in one series. A new series is started with number one, at the beginning of each calendar year and this number is prefixed with the last two figures of the year. The following information pertains to the body of the report and to reports requiring special coordination.

(1) So far as practicable, each report will cover one item of property and will contain a complete description of an individual case and an explanation of the unsatisfactory conditions, including all pertinent information relating thereto, so as to enable investigation and correction of the difficulties reported without necessitating further requests for information. It will also include—

(a) Name of the station, organization, or manufacturer from which the property was received.

(b) Army Air Forces order or shipping number.

(c) Total quantity on hand.

(d) Quantity known to be defective.

(e) Time in use, in months or hours.

(f) Inspector's number (obtained from the inspector's stamp).

(2) When an aircraft is reported, the report includes—

(a) Army Air Forces serial number.

(b) Engine model and Army Air Forces number.

(c) Date of the last depot inspection and repair.

(d) Depot at which the last depot inspection repair was accomplished.

(e) Flying time since the last depot inspection repair.

(f) Total flying time.

(3) When an engine is reported, the report includes—

(a) Engine model and Army Air Forces serial number.

(b) Model and serial number of the airplane in which it is installed.

(c) Running time at each overhaul.

(d) Number of hours since the last overhaul.

(e) Depot accomplishing the last overhaul.

(4) When a system, form, or method is reported, the report includes—

(a) A reference to the publication (A. C. circular, technical order, etc.) and the specific paragraph which it is desired to have changed.

(b) A complete explanation of the unsatisfactory condition resulting from the present situation.

(5) When reporting transient aircraft, the report indicates "transient aircraft," and includes the name of its home station.

(6) When property supplied by other arms or services (Signal Corps, Ordnance, etc.) is reported, the report includes—

(a) Proper nomenclature and type.
(b) Serial number, order number, and other pertinent name plate data.

(c) Time in use, in months or hours.

(d) Airplane model and Army Air Forces serial number, if the equipment is installed in an airplane.

(e) Changes or corrective action. If the changes or modifications recommended concerning another arm or service are not in conflict with technical orders, and have the concurrence of the station commander and the local representative of the arm or service concerned, the recommended changes may be accomplished at the station prior to forwarding the unsatisfactory report. When changes are accomplished, the report includes a statement as to the results obtained.

c. Responsibility and coordination.—Unsatisfactory reports are routed through the station engineering officer for investigation and any necessary changes or corrective action. The station engineering officer enters his comments by indorsement on all copies, adding such additional explanations or recommendations as he deems advisable. In addition, he decides the desirability of forwarding exhibits to the Chief of Field Service, Wright Field, Dayton, Ohio, and his indorsement includes a statement as to whether parts are retained or forwarded.

(1) Reports on property supplied by another arm or service are coordinated with the local representative of the arm or service concerned and his recommendations or comments are included.

(2) If recommendations are not obtainable, this fact is stated, and if the proper authority does not concur in the report or recommendations, the reasons for nonconcurrence are also stated.

d. Secret or confidential material.—AR 380-5 governs all reports on secret or confidential material.

e. Forwarding of exhibits.—(1) Where practicable, exhibits are forwarded for examination, except—

(a) When the exhibit is bulky or heavy and photographs are considered satisfactory, they may be sent in lieu of the part, unless otherwise directed by the Commanding General, Air Service Command.

(b) When a report pertaining to a part and failure thereof has been previously submitted and an exhibit furnished.

(2) When exhibits are forwarded, they are routed through the station engineering officer, who inspects them for secure and proper tagging. Exhibits from insular stations are forwarded through the depot.

(3) The disassembly of equipment to obtain exhibits is limited to the scope of work ordinarily performed by the organization.

(4) When the defective part is not forwarded, it is retained in proper custody, identified by identification tag (Form No. 83A), and its condition shown by an appropriate tag (Forms Nos. 49, 50, or 51), until a reply to the unsatisfactory report is received, except where it is necessary to accomplish repairs and return the parts or equipment to service to avoid an airplane or engine being held out of commission.

(5) If the exhibit to be forwarded is suitable for mailing, it is attached to the unsatisfactory report. Otherwise, it is properly tagged and forwarded to the Army Air Forces Supply Officer, Wright Field, Dayton, Ohio, marked for the Chief, Field Services.

(6) Parts or assemblies issued by other arms or services are not forwarded as exhibits unless specific authorization is obtained from the arm or service concerned or its representative. Such exhibits are retained in proper custody until a reply to the unsatisfactory report is received or disposition is otherwise ordered by the representative of the arm or service. Photographs may be submitted.

f. Accountability for exhibits.—(1) Expendable articles are forwarded without accountability, and are expended on the proper forms prior to forwarding. Expendable articles removed from equipment for this purpose are not carried on stock records.

(2) Nonexpendable articles are forwarded on shipping tickets to the Army Air Forces Supply Officer, Wright Field, Dayton, Ohio, marked for the Chief, Field Services. Such nonexpendable articles surveyed at the home station are forwarded without accountability.

(3) When final action on an unsatisfactory report has been taken by the Air Service Command, the exhibits are disposed of unless otherwise directed by the Air Service Command.

g. Copies and distribution.—Five copies of the report are prepared, unless the report is originated by the station engineering officer, in which case only four copies are necessary. These copies are then forwarded to the station engineering officer. The station engineering officer indorses all copies, retains the quintuplicate, and forwards four copies to the station commanding officer for distribution as required by A. C. Circular 15-54.

h. Action by Air Service Command.—The Air Service Command replies to each unsatisfactory report, sending three copies of the reply to the originating station. This reply contains the following information:

(1) Acknowledgment of report.

(2) Disposition, or shipping instructions for parts held as exhibits.

(3) A specific statement as to when final action closes the particular case and releases parts held as exhibits.

i. Files and disposition.—The station engineering officer maintains a complete file of all unsatisfactory reports submitted by activities at that station, and of all replies thereto from the Air Service Command. If final action relative to an unsatisfactory report is not received within 4 months (5 months in territorial possessions) he takes the necessary steps to determine the cause of the delay. Unsatisfactory reports are retained in the files for 1 year, after which they may be destroyed.

34. Technical Order Compliance Report (W. D., A. C. Form No. 55).—(See A. C. Circular 15-55.) *a. General.*—This report (fig. 22) is used for reporting to the Air Service Command compliance with all technical orders in which the requirement for the rendition of the report is specifically included.

WAR DEPT. AIR CORPS Form No. 55 (Ap. 10-11-40)	TECHNICAL ORDER COMPLIANCE REPORT (DUPLICATE)
---	---

T. O. No. 01-2500-46 Model P-40

T. O. Date 7-7-41 Serial No. 39-158

Date of Compliance 10-21-41 Organization 13 Mtl. Sqdn.

Station or Base Chanute Field, Rantoul, Ill.

Remarks: None

Inspector J. D. D. Approving Officer N. S. St.

16-19000 U. S. GOVERNMENT PRINTING OFFICE

FIGURE 22.—Technical Order Compliance Report (W. D., A. C. Form No. 55).

b. Preparation.—(1) One technical order compliance is reported on a form and a separate form is submitted for each airplane or engine affected. When compliance with technical orders is accomplished on several articles of equipment (other than airplanes and engines) at the same time, the serial numbers of all the items affected may be included on the form.

(2) At stations other than depots, the form is prepared by the organization complying with the technical order. When the work is completed, the inspector who inspected the work is responsible for submitting the form without delay. The form consists of a mailing card with a duplicate file copy attached. The original and the attached copy are filled in and signed by the inspector who inspected the completed work and by the officer who has immediate jurisdiction over the work performed, or his representative. The mailing portion of the form is forwarded to the Air Service Command through the station engineering office. The remaining part of the form is retained by the organization accomplishing the work until it is inspected by a representative of the directorate of technical inspection, headquarters, Commanding General, Army Air Forces, after which the card may be destroyed. In the event equipment is transferred after submission of Form No. 55, and prior to the visit of the representative of the directorate of technical inspection, the duplicate copy of the form is forwarded to the activity to whom the equipment was transferred. After the form is reviewed by a representative of the directorate of technical inspection at the new destination, it may be destroyed.

c. Entries.—Entries on the form are accomplished as follows:

(1) In the spaces provided, enter the number and date of issue of the technical order.

(2) Following "Model," enter the Army Air Forces symbol of the airplane, engine, or equipment affected. For example: "B-17B" airplane, "R-1536-11" engine, "E-7 generator", "D-7 altimeter," etc.

(3) Following "Serial No." enter the serial number of the airplane, engine, or accessory (equipment) of the items affected. If no serial numbers are involved, this space is left blank. Care should be taken to see that if the work called for is specified to be accomplished on an airplane, the airplane serial number is given. A frequent error is made in giving an engine or equipment serial number when the work is specified for that installation on certain models of airplanes.

(4) Opposite "Date of compliance," enter the date on which all work incidental to the accomplishment of the technical order was completed. If several technical orders are complied with simultaneously (when an engine is overhauled, or an airplane receives a depot inspection and repair) the date of compliance is the date on which all work on the airplane, engine, or equipment is completed and the work order closed.

(5) Following "Organizations" and "Station or base," enter the name of the organization and station submitting the report.

(6) Opposite "Remarks" include any pertinent remarks.

35. Parachute Inspection and Drop-Test Card (W. D., A. C. Form No. 58).—(See A. C. Circular 15-58.) *a. Purpose.*—This form (fig. 23) is used for recording various data in connection with drop testing, repacking, and inspection of parachutes. It is initiated at the time a parachute is first packed for service use and is continued throughout the life of the parachute.

WAR DEPARTMENT
AIR CORPS
Form No. 58
(Revised Apr. 23, 1941)

**PARACHUTE
INSPECTION AND DROP-TEST
CARD**

Type S-1, Seat Type
Part No. 076307
Serial No. 37-999

BY—	DATE	STATION
<i>J. Jones</i>	<i>D-6/9/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-6/10/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>R-6/10/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-6/20/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-6/30/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-7/10/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-7/20/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-7/30/39</i>	<i>Chanute</i>
<i>J. Jones</i>	<i>I-8/10/39</i>	<i>Chanute</i>

16-21131

FIGURE 23.—Parachute Inspection and Drop-Test Card (W. D., A. C. Form No. 58).

b. Preparation.—Enter the type, part number, and serial number of the parachute on the heading of the form.

(1) In the column headed "By" is entered the name, using initials for the first and middle names, of the individual responsible for the operation.

(2) In the column headed "Date" is entered the date of completion of the operation preceded by the applicable letter listed below to indicate the specific operation.

D Drop test.

R Repacking.

I Inspection.

(3) In the column headed "Station" is entered the name of the activity accomplishing the operation.

c. Disposition.—When all the spaces on the form are filled, a new form is prepared and the entries indicating the *last* drop test, repacking, and inspection are transcribed to the new form. The replaced forms are retained by the station parachute officer for 1 year, after which time they may be destroyed. This form is folded with the crease extending across the width of the card so as to permit insertion in the pocket on the parachute pack assembly. The current form is retained in the pocket and accompanies the parachute when transferred.

36. Technical Instruction Compliance Record (W. D., A. C. Forms Nos. 60A and 60B).—(See A. C. Circular 15-60.) *a. Purpose.*—The primary purpose of the technical instruction compliance records for aircraft and engines is to furnish a historical record of all one-time changes and inspections performed on an airplane or engine throughout its service life. All entries made on the forms are continuations of those previously entered, thus providing a complete record for a particular airplane or engine.

b. Information recorded.—The technical instruction compliance record pertaining to aircraft is designated as Form No. 60A, whereas the form applying to engines is designated as Form No. 60B. Due to the similarity of these two forms only Form No. 60A is illustrated in figure 24 ① and ②. Entries on these forms provide the following:

(1) A method for operating activities to record technical instructions directing one-time inspections, changes, or modifications, which are accomplished by the operating activity.

(2) A record of the work performed when aircraft are sent to depots for the express accomplishment of a technical change.

(3) A record of depot inspections and repairs of aircraft, the name of the depot that accomplished such inspection, the technical instructions complied with, and the total flying time when such work was accomplished.

(4) A record of overhauls of engines, the name of the depot performing the overhaul, the technical instructions complied with, and the total flying time when such work was accomplished.

WAR DEPARTMENT
AIR CORPS
Form No. 80
(Tentative)
Rev. July 1, 1940

TECHNICAL INSTRUCTION COMPLIANCE RECORD

Page No. 1 Aircraft model A-20-A A. C. No. 39-721 Date of purchase 12-17-40
Squadron No. 29

TECHNICAL INSTRUCTION										
DATE	NUMBER	TITLE	LOCALLY			Form 56 Req'd.	DATE COMPLETED	INSPECTED		ORGANIZATION
			Immediately	Feasible	Practicable			Inspector	Engineering Officer	
6-1-38 1-20-38 7-24-39	01-1-13 01-1-16 01-1-19	Installation of latch, data cases Installation of flexible connections for Instruments Inspection and installation of pressure lines					1-3-41 1-3-41 1-3-41	gd gd gd	cd cd cd	10th Mtl Sqd. " " "

WP-1-15-40-101

① Front.

HISTORICAL RECORD

RECORD OF ASSOCIATE EQUIPMENT						REMARKS Precede each remark with name of station and date Enter each accident which resulted in damage or was caused by material failure. Show cause and result.
ARTICLE	MODEL	A. C. or Serial No.	INSTALLED		DISPOSITION	
			Date	Airplane Time		
Engine	B-2600-3	39-1498	Factory	100	4-21-41 152:30	Supply
Engine	B-2600-3	39-1499	"	100	4-21-41 152:30	Supply
Engine	B-2600-11	40-755	4-28-41	152:30		
Engine	B-2600-11	40-756	4-28-41	152:30		

RECORD OF TRANSFERS					
RECEIVED BY AND SHIPPED BY		DATE	HOURS Sustained D. I. R.	TOTAL HOURS	INSPECTED Sustained Tech. Order 80-22-4
Station	Organization				
Chamute Field	10th Mat'l. Sqdn	12-24-40	0:00	20:50	M. A. Roberts, Major, A. C.
Chamute Field	10th Mat'l. Sqdn	8-1-41	0:00	21:25	M. A. Roberts, Major, A. C.
P. A. D.	Depot	8-1-6-41	0:00	22:35	R. C. Carpenter, Major, A. C.
P. A. D.	Depot Supply	8-2-28-41	0:00	151:30	R. C. Carpenter, Major, A. C.
Chamute Field	13th Mat'l. Sqdn	8-3-4-41	0:00	152:30	M. A. Roberts, Major, A. C.

② Back.

FIGURE 24.—Technical Instruction Compliance Record (W. D., A. C. Form No. 80A).

c. Initiation of forms.—All entries except signatures and initials of individuals are made by typewriter.

(1) When a new airplane or engine is received from the contractor's plant by any Army Air Forces activity, Forms Nos. 60A and 60B are immediately initiated by the receiving activity. If the airplane or engine is to be placed in service immediately, the engineering officer of the receiving activity initiates the forms. If the airplane or engine is to be retained in station storage, the station supply officer initiates the forms.

(2) In the event that technical instructions directing one-time inspections or changes to new equipment are received prior to the initiation of the form for such equipment, the instructions are entered thereon at the time the forms are initiated.

(3) In the event that a Form No. 60A or 60B is lost, a new form is prepared immediately and every effort should be made to incorporate on the new form all the information contained on the old form.

d. Entries on face of forms.—(1) Entries on the heading are considered self-explanatory.

(2) All technical instructions which direct the accomplishment of a technical change or a one-time inspection of an aircraft or engine by service activities, contain in the heading a note requiring entries on Forms Nos. 60A and 60B, which specifies when and by whom the work is to be accomplished. Upon receipt of such instructions the engineering officer responsible for the equipment (or the supply officer if the equipment is in storage) enters in the spaces provided on the face of the form the date, number, and title of the technical instructions, and indicates when the work is to be accomplished by placing an asterisk in one of the columns headed "Immediately," "As soon as possible," or "As soon as practicable," as the case may be. If the technical instructions specify the time of accomplishment to be other than as indicated by one of these column headings, a notation of when the work is to be accomplished is entered immediately following the title entry. Service activities do not make entries of technical instructions which specify work to be accomplished only by depots. Frequently, in the interest of brevity, technical radiograms and telegrams do not contain the statement specifying when and by whom the work is to be accomplished. However, when one-time inspections or changes to equipment are directed therein, the instructions are likewise entered on Forms Nos. 60A and 60B, as applicable. If the technical instructions require the submission of a Form No. 55, an asterisk is inserted in the column headed "Form 55 required."

(3) (a) Upon completion of the work directed by the technical instructions, the inspector of the activity responsible for the accom-

plishment of the work enters the date the work is completed, the initials or name of the organization accomplishing the work, and his initials in the columns provided. The inspector also initiates Form No. 55, if required. The engineering officer of the activity responsible for the accomplished work then enters his initials in the column provided, as an indication that the technical instructions have been properly complied with and that Form No. 55, if required, has been submitted.

(b) When a technical change is accomplished at a station other than the home station of the aircraft, and Forms Nos. 60A and 60B are not with the aircraft, notation of such accomplishment is made on Form No. 1 and the commanding officer of the home station is notified by letter. In such cases, the activity charged with the maintenance of Forms Nos. 60A and 60B makes the entries of compliance. The initials of the inspector and the engineering officer signify that the change has been completed to their satisfaction, and that Form No. 55, if required, has been submitted.

(c) When a technical change is accomplished by a depot during overhaul, or inspection and repair, only such technical orders as are complied with at that particular time and which direct one-time changes or inspection are entered by the depot.

(4) When a technical order is received which replaces a previous issue of the same technical order, a line is drawn through the original entry on the form and a new entry is made which bears the date of the last issue of the technical order. If the work has been accomplished prior to receipt of the latest issue, a notation to that effect is made opposite the new entry. If a rescinded technical order has not been complied with, a line is drawn through the old entry on the forms and a notation made opposite the old entry that the technical order thus lined out has been replaced by Technical Order No. ----- dated ----- . When a technical order replaces a previous technical order, and specifies additional work, a new number is usually assigned to insure that a new entry will be made on the forms.

e. Entries on back of forms.—(1) Under the heading "Record of associate equipment" on Form No. 60A is entered the model, serial number, date installed, date removed, and disposition of all engines installed or removed from the aircraft. Spaces provided for entering airplane flying time under the headings "Installed" and "Removed" are also filled in at the time of installation and removal of engines.

(2) Under this heading on Form No. 60B is entered models or types of starter, carburetor, magneto, generator, fuel pump, vacuum pump, etc., that are installed on the engine. These data are entered by the activity initiating the form. Spaces provided for recording the serial numbers of the various items classified as "associate equipment" are

filled in when such equipment is installed, and the spaces for recording the engine time at which individual items of associate equipment are installed and removed are filled in at the time of installation or removal of such equipment. These data are entered by the activity performing the installation or removal. When articles of associated equipment are installed on an engine undergoing work in a depot, the entries are made by the depot.

(3) (a) When equipment is received for storage, or is issued from storage, by a depot or station supply officer, the name of the depot or station, the designation of the supply activity, and the date of receipt or issue are entered under "Record of transfers." Equipment received for immediate reissue or shipment to another activity or station is not considered as received for storage, and no entries by the supply officers are required in such cases.

(b) When an operating activity receives or transfers the equipment, including transfers for depot inspection and repair or engine overhaul, the name of the station, the designation of the activity, and the date of receipt or transfer are entered.

(c) Shipment is indicated by a small "s" preceding the date of shipment; and receipt by a small "r" preceding the date received.

(d) The hours since depot inspection and repair or engine overhaul and the total hours at the date of transfer are recorded in the appropriate columns.

(e) The column headed "Inspected" is initialed by the supply or engineering officer responsible for the maintenance of the forms at the time of the transaction concerned and indicates that all entries are correct.

(4) The following entries are made under the heading "Remarks":

(a) Dates of all previous depot inspections and repairs or engine overhauls.

(b) The name of the depot accomplishing the last depot inspection and repair or engine overhaul and the date of its completion.

(c) The total flying time at the last depot inspection and repair or engine overhaul.

(d) Such other information as would be of possible future interest or value, such as, top overhaul of the engine, replacement of major assemblies on the airplane or engine, damage to the equipment from accidents or other causes, the dimensions of oversize cylinders installed, etc.

(e) List of service test equipment installed, if any.

f. Filing, maintenance, and disposition.—(1) The engineering officer of the activity actually maintaining the equipment concerned is

responsible for the maintenance of these forms. He is responsible for the entries on the forms while the equipment is under his jurisdiction. Forms Nos. 60A and 60B may be filed separately or Form No. 60B may be filed with Form No. 60A for those engines installed in aircraft. Inactive and active pages of Form No. 60A together with those of Form No. 60B for the installed engines are clipped together and forwarded to the new organization when the equipment is transferred.

(2) For aircraft and engines in storage, the supply officer (depot or station) who has jurisdiction over the equipment maintains the technical compliance records pertaining thereto, and is responsible for listing on the forms instructions which require compliance by the operating activity when the equipment is placed in service. In the event the work directed by such instructions is required to be accomplished prior to issue, the supply officer is responsible for the proper entry of data relative to such accomplishment.

(3) If the equipment is transferred to a depot or to another organization or activity for operation, necessary work, or storage, the forms pertaining thereto are promptly forwarded to the new organization or activity. Should the equipment be flown to the new destination, the forms accompany the aircraft. When the equipment is shipped other than by air, the forms are forwarded by mail with the shipping ticket at the time shipment is accomplished.

(4) Depots are responsible for the maintenance of the forms throughout the entire period aircraft or engines are at the depot for work or storage, and make all entries required thereon. While aircraft and engines are at the depot, the officer under whose jurisdiction the equipment may be at any time is responsible for the maintenance of the forms.

(5) When the equipment to which the forms pertain is dropped from the records (report of survey or inspection and inventory report), the technical compliance records are retained for a period of 6 months by the supply officer last accountable, after which they may be destroyed, provided they have been inspected by a representative of the Directorate of Technical Inspection, Headquarters, Commanding General, Army Air Forces.

37. Propeller Historical Record (W. D., A. C. Form No. 61).—
(See A. C. Circular 15-61.) *a. Purpose.*—The purpose of this form (fig. 25) is to provide a historical record for controllable propellers which will indicate the total hours of operation, operating time since last overhaul, number of overhauls, repairs, replacement of parts, etc. This form is prepared and maintained for each controllable propeller on hand.

Form No. 61
NAVY DEPARTMENT
Air Corps
(Revised Oct. 11, 1949)

PROPELLER HISTORICAL RECORD

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 3850-201
Purchase order No. W535AC-8650 Date received 4/28/37 Blade drawing No. 6105-A-18

Business and Date	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propulsion Horsepower at Installation	INSTALLED			REMOVED			Propulsion Horsepower at Removal
			Engine Model and Serial Number	Accessory Model and Serial Number	Airplane Model and Installation	Status and Date	Accessory Model and Serial Number	Status and Date	
Douglas Co.	Hub No. 36-1921	0100	B-1820-45	B-18	0100	Hamilton Field 3-15-40	100:00		100:00
	Blade No. 36-2343	0100							100:00
	Blade No. 36-2345	0100							100:00
	Blade No. 36-2345	0100							100:00
Hamilton Field	Hub No. 36-1921	100:00	B-1820-45	B-18	300:00	Hamilton Field 9-20-40	600:00		400:00
	Blade No. 36-2343	100:00							400:00
	Blade No. 36-2344	100:00							400:00
	Blade No. 36-2345	100:00							400:00
3-19-40	Hub No.		GENERAL OVERHAUL						
	Blade No.								
	Blade No.								
	Blade No.								
Hamilton Field	Hub No. 36-1921	400:00							
	Blade No. 36-2343	400:00							
	Blade No. 36-2344	400:00							
	Blade No. 36-2345	400:00							
9-21-40	Hub No.								
	Blade No.								
	Blade No.								
	Blade No.								
Hamilton Field	Hub No. 36-1921	400:00	B-1820-45	B-18	700:00	Hamilton Field 2-5-41	1050:00		350:00
	Blade No. 36-2343	400:00							350:00
	Blade No. 36-2344	400:00							350:00
	Blade No. 36-2345	200:00							350:00
9-30-41	Hub No.								
	Blade No.								
	Blade No.								
	Blade No.								
Hamilton Field	Hub No. 36-1921	750:00							
	Blade No. 36-2343	750:00							
	Blade No. 36-2344	750:00							
	Blade No. 36-2345	550:00							
2-6-41	Hub No.								
	Blade No.								
	Blade No.								
	Blade No.								
Hamilton Field	Hub No. 36-1921	750:00	B-1820-45	B-18	650:00	Kelly Field 6-1-41	810:00		160:00
	Blade No. 36-2343	750:00							160:00
	Blade No. 36-2344	0100							160:00
	Blade No. 36-2345	550:00							160:00
3-1-41	Hub No.		37-450	36-315					
	Blade No.								
	Blade No.								
	Blade No.								
Hamilton Field	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00				
	Blade No. 36-2343	910:00							
	Blade No. 36-2344	160:00							
	Blade No. 36-2345	710:00							
Kelly Field	Hub No. 36-1921	910:00	37-455	36-315					
	Blade No. 36-2343	910:00							
	Blade No. 36-2344	160:00							
	Blade No. 36-2345	710:00							
6-5-41	Hub No.								
	Blade No.								
	Blade No.								
	Blade No.								

① Front.

REMARKS

Provide each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure.
3-15-40

Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings;
9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-650.

Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial
2-8-41 #36-2390.

Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced.
6-1-41

Ⓢ Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

PROPELLER HISTORICAL RECORD

WATER No. 61
WATER No. 61
Air (Case)
(Issued Oct. 11, 1949)

Propeller type	Hub drawing No.	11'6"	Blade drawing No.	5105-A-18	Hub drawing No.	5105-A-18	
Purchase order No.	W535AC-8650	Date received	4/28/37	Blade drawing No.	5105-A-18	Blade drawing No.	5105-A-18
Business and Date	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propeller Hours at Installation	INSTALLED		REMOVED		Propeller Hours Since Last Overhaul
			Engine Model and Serial Number	Amplifier Model and Serial Number	Amplifier Hours at Installation	Station and Date	Amplifier Hours at Removal
Douglas Co.	Hub No. 36-1921	0:00	B-1820-45	B-18	0:00	Hamilton Field 3-15-40	100:00
	Blade No. 36-2343	0:00					100:00
	Blade No. 36-2345	0:00					100:00
	Blade No. 36-2345	0:00					100:00
12-20-39	Hub No. 36-1921	100:00	B-1820-45	B-18	300:00	Hamilton Field 9-20-40	400:00
	Blade No. 36-2343	100:00					400:00
	Blade No. 36-2344	100:00					400:00
	Blade No. 36-2345	100:00					400:00
Hamilton Field	Hub No. 36-1921	400:00	GENERAL OVERHAUL	GENERAL OVERHAUL			
	Blade No. 36-2343	400:00					
	Blade No. 36-2344	400:00					
	Blade No. 36-2345	400:00					
9-21-40	Hub No. 36-1921	400:00	B-1820-45	B-18	700:00	Hamilton Field 2-5-41	350:00
	Blade No. 36-2343	400:00					350:00
	Blade No. 36-2344	400:00					350:00
	Blade No. 36-2345	200:00					350:00
Hamilton Field	Hub No. 36-1921	750:00	GENERAL OVERHAUL	GENERAL OVERHAUL			
	Blade No. 36-2343	750:00					
	Blade No. 36-2344	750:00					
	Blade No. 36-2345	550:00					
2-6-41	Hub No. 36-1921	750:00	B-1820-45	B-18	650:00	Kelly Field 6-1-41	160:00
	Blade No. 36-2343	750:00					160:00
	Blade No. 36-2344	0:00					160:00
	Blade No. 36-2345	550:00					160:00
Hamilton Field	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00		
	Blade No. 36-2343	910:00					
	Blade No. 36-2344	160:00					
	Blade No. 36-2345	710:00					
3-1-41	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00		
	Blade No. 36-2343	910:00					
	Blade No. 36-2344	160:00					
	Blade No. 36-2345	710:00					
Kelly Field	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00		
	Blade No. 36-2343	910:00					
	Blade No. 36-2344	160:00					
	Blade No. 36-2345	710:00					
6-5-41	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00		
	Blade No. 36-2343	910:00					
	Blade No. 36-2344	160:00					
	Blade No. 36-2345	710:00					

① Front.

REMARKS

Precede each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure.
3-15-40

Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cut. bearings;
9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-850.

Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial
2-8-41 #36-2330.

Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced.
6-1-41

② Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

Form No. 61
NAVY DEPARTMENT
Rev. 10-11-40

PROPELLER HISTORICAL RECORD

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 1350-201
Purchase order No. W535AC-8650 Date received 4/28/37 Blade drawing No. 6105-A-18

Screw and Date	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propeller Hours at Installation	INSTALLED		REMOVED		
			Engine Model and Serial Number	Assembly Model and Serial Number	Assembly Hours at Installation	Station and Date	Assembly Hours at Removal
Douglas Co.	Hub No. 36-1921	0100					Propeller Hours Since Last Overhaul
	Blade No. 36-2343	0100					
	Blade No. 36-2345	0100					
	Blade No. 36-2345	0100					
12-20-39	Hub No.						
	Blade No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
Hamilton Field	Hub No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
	Blade No. 36-2345	100100					
3-19-40	Hub No.						
	Blade No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
Hamilton Field	Hub No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
	Blade No. 36-2345	100100					
9-21-40	Hub No.						
	Blade No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
Hamilton Field	Hub No. 36-1921	100100					
	Blade No. 36-2343	100100					
	Blade No. 36-2344	100100					
	Blade No. 36-2345	100100					
9-30-41	Hub No.						
	Blade No. 36-1921	200100					
	Blade No. 36-2343	200100					
	Blade No. 36-2344	200100					
Hamilton Field	Hub No. 36-1921	750100					
	Blade No. 36-2343	750100					
	Blade No. 36-2344	750100					
	Blade No. 36-2345	750100					
2-6-41	Hub No.						
	Blade No. 36-1921	750100					
	Blade No. 36-2343	750100					
	Blade No. 36-2344	750100					
Hamilton Field	Hub No. 36-1921	750100					
	Blade No. 36-2343	750100					
	Blade No. 36-2344	750100					
	Blade No. 36-2345	750100					
3-1-41	Hub No.						
	Blade No. 36-1921	500100					
	Blade No. 36-2343	500100					
	Blade No. 36-2344	500100					
Kelly Field	Hub No. 36-1921	910100					
	Blade No. 36-2343	910100					
	Blade No. 36-2344	910100					
	Blade No. 36-2345	910100					
6-5-41	Hub No.						
	Blade No. 36-1921	710100					
	Blade No. 36-2343	710100					
	Blade No. 36-2344	710100					

① Front.

REMARKS

Precede each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure.
3-15-40

Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings;
9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-850.

Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial
2-6-41 #36-2330.

Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced.
6-1-41

② Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

PROPELLER HISTORICAL RECORD

Form No. 61
NAVY DEPARTMENT
Rev. 10-11-1940

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 350-201
Purchase order No. W535AC-8650 Date received 4/28/37 Blade drawing No. 6105-A-18

Sponsor and Date	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propellers Reqs. at Installation	INSTALLED			REMOVED		
			Engine Model and Serial Number	Alternative Model and Serial Number	Alternative Model at Installation	Status and Date	Alternative Model at Removal	Propellers Reqs. Since Last Overhaul
Douglas Co.	Hub No. 36-1921	0:00						100:00
	Blade No. 36-2343	0:00						100:00
	Blade No. 36-2345	0:00						100:00
	Blade No. 36-2345	0:00						100:00
12-20-39	Hub No. 36-1921	100:00						400:00
	Blade No. 36-2343	100:00						400:00
	Blade No. 36-2344	100:00						400:00
	Blade No. 36-2345	100:00						400:00
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
3-19-40	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
9-21-40	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
9-30-41	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
2-6-41	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
3-1-41	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
Kelly Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
6-5-41	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						

① Front.

REMARKS

Provide each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure.
3-15-40

Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings;
9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-850.

Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial
2-8-41 #36-2330.

Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced.
6-1-41

② Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

PROPELLER HISTORICAL RECORD

WATER No. 61
WAS DEPARTMENT
Air Corps
(Current Oct. 14, 1949)

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 1350-201
Purchase order No. W535AC-8650 Date received 4/28/57 Blade drawing No. 6105-A-18

Section and Date	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propeller Hours at Installation	INSTALLED			REMOVED		Propeller Hours Since Last Overhaul
			Engine Model and Serial Number	Amalgam Model Number	Assemble Hours at Installation	Status and Date	Assembly Hours at Removal	
Douglas Co.	Hub No. 36-1921	0100	B-1820-45	B-18	0100	Hamilton Field 3-15-40	100:00	100:00
	Blade No. 36-2343	0100						100:00
	Blade No. 36-2345	0100						100:00
	Blade No. 36-2345	0100						100:00
12-20-39	Hub No. 36-1921	100:00	B-1820-45	B-18	300:00	Hamilton Field 9-20-40	600:00	400:00
	Blade No. 36-2343	100:00						400:00
	Blade No. 36-2344	100:00						400:00
	Blade No. 36-2345	100:00						400:00
Hamilton Field	Hub No. 36-1921	400:00	GENERAL OVERHAUL	GENERAL OVERHAUL				
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
9-21-40	Hub No. 36-1921	400:00	B-1820-45	B-18	700:00	Hamilton Field 2-5-41	1050:00	350:00
	Blade No. 36-2343	400:00						350:00
	Blade No. 36-2344	400:00						350:00
	Blade No. 36-2345	200:00						350:00
Hamilton Field	Hub No. 36-1921	750:00	GENERAL OVERHAUL	GENERAL OVERHAUL				
	Blade No. 36-2343	750:00						
	Blade No. 36-2344	750:00						
	Blade No. 36-2345	550:00						
2-8-41	Hub No. 36-1921	750:00	B-1820-45	B-18	650:00	Kelly Field 6-1-41	810:00	160:00
	Blade No. 36-2343	750:00						160:00
	Blade No. 36-2344	750:00						160:00
	Blade No. 36-2345	550:00						160:00
Hamilton Field	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00			
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	160:00						
	Blade No. 36-2345	710:00						
3-1-41	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00			
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	160:00						
	Blade No. 36-2345	710:00						
Kelly Field	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00			
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	160:00						
	Blade No. 36-2345	710:00						
6-5-41	Hub No. 36-1921	910:00	B-1820-45	B-18	810:00			
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	160:00						
	Blade No. 36-2345	710:00						

① Front.

REMARKS

Precede each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure.
3-15-40

Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings;
9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-850.

Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial
2-8-41 #36-2330.

Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced.
6-1-41

② Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

PROPELLER HISTORICAL RECORD

WATER No. 61
WAS DEPARTMENT
Air Corps
(Revised Oct. 11, 1949)

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 3350-201
Purchase order No. W515AC-8650 Date received 6/28/37 Blade drawing No. 6105-A-18

Screw and Data	IDENTIFICATION A. C. SERIAL NUMBERS	Total Propeller Hours at Installation	INSTALLED			REMOVED		Propeller Hours Since Last Overhaul
			Engine Model and Serial Number	Aviation Model Number	Aviation Hours at Installation	Station and Date	Aviation Hours at Removal	
Douglas Co.	Hub No. 36-1921	0:00						100:00
	Blade No. 36-2343	0:00						100:00
	Blade No. 36-2345	0:00						100:00
	Blade No. 36-2345	0:00						100:00
12-20-39	Hub No.							400:00
Hamilton Field	Hub No. 36-1921	100:00						400:00
	Blade No. 36-2343	100:00						400:00
	Blade No. 36-2344	100:00						400:00
	Blade No. 36-2345	100:00						400:00
3-19-40	Hub No.							
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
9-21-40	Hub No.							
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
9-30-41	Hub No.							
Hamilton Field	Hub No. 36-1921	400:00						
	Blade No. 36-2343	400:00						
	Blade No. 36-2344	400:00						
	Blade No. 36-2345	400:00						
2-6-41	Hub No.							
Hamilton Field	Hub No. 36-1921	750:00						
	Blade No. 36-2343	750:00						
	Blade No. 36-2344	750:00						
	Blade No. 36-2345	750:00						
Hamilton Field	Hub No.							
Hamilton Field	Hub No. 36-1921	750:00						
	Blade No. 36-2343	750:00						
	Blade No. 36-2344	750:00						
	Blade No. 36-2345	750:00						
3-1-41	Hub No.							
Hamilton Field	Hub No. 36-1921	910:00						
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	910:00						
	Blade No. 36-2345	910:00						
6-5-41	Hub No.							
Hamilton Field	Hub No. 36-1921	910:00						
	Blade No. 36-2343	910:00						
	Blade No. 36-2344	910:00						
	Blade No. 36-2345	910:00						

① Front.

REMARKS

Provide each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure. 3-15-40
Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings; Blade serial #36-2345 damaged, replaced with blade serial #39-850. 9-21-40
Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial #36-2350. 2-8-41
Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced. 6-1-41

④ Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

PROPELLER HISTORICAL RECORD

WATER No. 61
WAS DEPARTMENT
Air Corps
(Revised Oct. 11, 1949)

Propeller type Hamilton Standard Dia. 11'6" Hub drawing No. 350-201
Purchase order No. W535AC-8650 Date received 4/28/57 Blade drawing No. 6105-A-18

Business and Date	IDENTIFICATION & C. SERIAL NUMBERS	Total Propeller Hours at Installation	INSTALLED			REMOVED			Propeller Hours Since Last Overhaul
			Engine Model and Serial Number	American Model Number	Airplane Model at Installation	Status and Date	American Model at Removal		
Douglas Co.	Hub No. 36-1921	0:00							100:00
	Blade No. 36-2343	0:00							100:00
	Blade No. 36-2345	0:00							100:00
	Blade No. 36-2345	0:00							100:00
12-20-39	Hub No.								400:00
Hamilton Field	Hub No. 36-1921	100:00							400:00
	Blade No. 36-2343	100:00							400:00
	Blade No. 36-2344	100:00							400:00
	Blade No. 36-2345	100:00							400:00
3-19-40	Hub No.								
Hamilton Field	Hub No. 36-1921	400:00							
	Blade No. 36-2343	400:00							
	Blade No. 36-2344	400:00							
	Blade No. 36-2345	400:00							
9-21-40	Hub No.								
Hamilton Field	Hub No. 36-1921	400:00							350:00
	Blade No. 36-2343	400:00							350:00
	Blade No. 36-2344	400:00							350:00
	Blade No. 36-2345	200:00							350:00
9-30-41	Hub No.								
Hamilton Field	Hub No. 36-1921	750:00							
	Blade No. 36-2343	750:00							
	Blade No. 36-2344	750:00							
	Blade No. 36-2345	550:00							
2-6-41	Hub No.								
Hamilton Field	Hub No. 36-1921	750:00							160:00
	Blade No. 36-2343	750:00							160:00
	Blade No. 36-2344	0:00							160:00
	Blade No. 36-2345	590:00							160:00
3-1-41	Hub No.								
Hamilton Field	Hub No. 36-1921	910:00							
	Blade No. 36-2343	910:00							
	Blade No. 36-2344	160:00							
	Blade No. 36-2345	710:00							
6-5-41	Hub No.								
Kelly Field	Hub No. 36-1921	910:00							
	Blade No. 36-2343	910:00							
	Blade No. 36-2344	160:00							
	Blade No. 36-2345	6-5-41							
Hamilton Field	Hub No. 36-1921	910:00							
	Blade No. 36-2343	910:00							
	Blade No. 36-2344	160:00							
	Blade No. 36-2345	710:00							

① Front.

REMARKS

Precede each entry with the name of the station and date

Hamilton Field - Removed for engine change due to engine failure. 3-15-40
Hamilton Field - Propeller given complete overhaul - Replaced piston gaskets; cwt. bearings; 9-21-40 Blade serial #36-2345 damaged, replaced with blade serial #39-850.
Hamilton Field - Propeller given complete overhaul - Blade serial #36-2344 damaged and replaced with blade serial 2-8-41 #36-2330.
Kelly Field - Removed for engine change due to engine failure. Complete visual inspection. No parts replaced. 6-1-41

② Back.

FIGURE 25.—Propeller Historical Record (W. D., A. C. Form No. 61).

b. Initiation.—(1) When a new controllable propeller is received from a contractor's plant by any activity, this form is initiated by the receiving authority.

(a) If the propeller is to be placed in service immediately, the engineering officer of the receiving organization initiates the record.

(b) If the propeller is to be retained in storage the responsible supply officer initiates the record.

(2) In the event that this form is lost, a new form is prepared immediately. Every effort is exerted to incorporate on the new form all the information contained on the lost form that it is possible to obtain from other available records.

c. Maintenance.—(1) This form is maintained by the engineering officer of the organization responsible for the maintenance of the aircraft on which a controllable propeller is installed.

(2) Depot and station supply officers are responsible for the preparation and maintenance of this form for controllable propellers in storage.

(3) Depot engineering officers are responsible for the maintenance of this form for all controllable propellers in the depot engineering department undergoing overhaul.

(4) When a form is filled on either side, a new form is started as an added page. Completed pages are securely stapled together and then loosely clipped to the active page.

d. Entries.—So far as practicable, all entries are made with a typewriter. Otherwise ink is used.

(1) The face of the form is accomplished as follows:

(a) *Heading.*—The required data are entered as indicated.

(b) *Station and date.*—On the upper line is entered the name of the station performing the installation, and on the second line, the date.

(c) *Identification.*—The Air Corps serial number, or in the event an Air Corps serial number is not specified, the manufacturer's serial number of the hub assembly and each blade installed, is entered.

(d) *Total propeller hours at installation.*—Each time a propeller or blade is installed on an engine, the total operating time of the hub and each blade is entered. This is obtained by subtracting the airplane hours at installation from the airplane hours at removal, and adding the difference to the total propeller hours at installation shown in the preceding entry. The total thus secured is the total hours of operation of the hub and each blade.

(e) *Installed.*—Under airplane and engine model number and serial number enter designation in the upper space and the serial num-

ber in the lower space. Under airplane hours at installation, enter the total hours since the last overhaul of the airplane at the time of propeller installation, as shown by the last entry in the maintenance inspection record.

(f) *Removed*.—When a controllable propeller is removed from an airplane for replacement of a blade, overhaul, engine change, or installation on another airplane, the name of the station at which the propeller is removed and the date of removal are entered in the space provided. The total hours since last overhaul of the airplane at the time the propeller is removed as shown by the last entry on the maintenance inspection record are also entered.

(g) *Propeller hours since last overhaul*.—When a propeller is removed for replacement of a blade, reinstallation on another engine, or overhaul, the operating time since last overhaul of the hub and each blade is entered. This is obtained by subtracting the airplane hours at the time of installation from the airplane hours at the time of removal and adding to the difference the hub and blade hours since the last overhaul, as shown in the preceding entry.

(h) *General overhaul*.—When a propeller receives a general overhaul, all columns under the headings "Installed" and "Removed" are ignored and "General overhaul" is entered across all columns. Under "Station and date," "Identification," and "Propeller hours at installation" the instructions given in (1) above apply.

(2) The reverse side of the form provides for remarks regarding each entry appearing on the face, in the form of a brief description, as follows:

(a) The date the propeller is condemned or declared damaged beyond repair and the reason for condemnation.

(b) The date a new blade is installed and the reason this was necessary.

(c) Repairs or parts replaced and the reason therefor.

(d) Compliance with technical orders directing one-time inspection or maintenance instructions.

(e) Each entry is preceded by the name of the station and the date on which the work was accomplished.

e. *Filing*.—Propeller historical records for installed propellers may be filed with Form No. 60A for the aircraft on which it is installed, or they may be filed separately.

f. *Disposition and transfer*.—(1) When propellers or blades are transferred from one activity to another, the Forms No. 61 pertaining thereto are forwarded to the new organization or activity. Should the equipment be flown to the new destination, the forms pertaining to

the propellers accompany the aircraft. If the propellers or blades are shipped other than by air the forms are forwarded by mail with the shipping tickets at the time of shipment.

(2) If a propeller hub assembly or the complete propeller assembly is destroyed or condemned, the historical record is forwarded to the Chief, Field Services, Wright Field, Dayton, Ohio.

(3) When a propeller blade is destroyed or condemned, a true copy of the propeller historical record is forwarded to the Chief, Field Services.

(4) When a propeller blade is returned to stock or transferred as an individual blade and not as a part of a complete propeller, a propeller historical record is prepared for that blade, listing such available data as may be called for on the record. If the blade is transferred, the historical record accompanies it. It is essential that the operating time of a separate blade becomes a matter of record so that it may be carried forward when the blade is assembled in a hub. New blades received from a contractor as spares are not recorded until installed in a propeller assembly.

38. Stores Charge (W. D., A. C. Form No. 81).—(See A. C. Circular 15-81.)—*a. General.*—This form (fig. 26) is used by Army Air Forces supply officers for issuing expendable Army Air Forces supplies for immediate consumption. Commanding officers of Army Air Forces activities authorize certain individuals to sign for property on this form and a list of the names of individuals so authorized are posted at each stockroom.

b. Preparation and entries.—Form No. 81 is accomplished in the following manner:

(1) Opposite the word "Station" is entered the name of the station at which the supplies are issued.

(2) Opposite the word "Organization" is entered the name of the organization or department to which the supplies are issued.

(3) Opposite the headings "Account symbol" and "Work order No." are entered the proper account symbol and work order number. No stores charge may contain issues to more than one account symbol or work order number. A space is also provided for entering the voucher number.

(4) Opposite the word "Date" is entered the date of the transaction.

(5) Under the respective headings are entered the quantity, unit, part number, and description (name) of each article. Entries under the heading "Total cost" are accomplished only at depots or stations maintaining cost offices. No entry is required under the heading "Unit cost" when the total cost is extended by machine at the time of posting.

WAR DEPARTMENT
AIR CORPS
FORM NO. 81
(Revised Sept. 28, 1939)

STORES CHARGE

VOUCHER NO. _____

PROPERTY CLASS 05-A

STATION Chanute Field, Rantoul, Illinois WORK ORDER NO. 48-428

ORGANIZATION Sub-Depot Engineering DATE 10-31-41 ACCOUNT SYMBOL YFM-1

QUANTITY	UNIT	PART NO.	DESCRIPTION	UNIT COST	TOTAL COST
1	ea	39A3350	Adapter Assy. - Tachometer Drive Type A-6		
			Stock No. 63-7250		
I certify that in accordance with the provisions of AC Circular 65-38, status of replaced article is Initial Issue. <i>John Doe</i> <i>1st Lt. A. C.</i>					
ISSUED BY _____ COST DATA ABSTRACTED BY _____ ENTERED ON STOCK CARDS BY _____					
				TOTAL	

RECEIVED BY *R. Brown*

gpo c16-11092

FIGURE 26.—Stores Charge (W. D., A. C. Form No. 81).

(6) In the spaces provided at the bottom of the form are entered the following: Opposite the heading "Issued by," the signature of the issuing stockkeeper; opposite the heading "Cost data abstracted by," the initials of the individual who abstracts the cost data; opposite the heading "Entered on stock cards by," the initials of the stock record clerk who accomplishes the stock card posting; and opposite the heading "Received by," the signature of the individual authorized to obtain supplies on a stores charge.

c. Number of copies and distribution.—At depots or stations maintaining cost offices, stores charges are prepared in triplicate, and elsewhere in duplicate. All copies are turned in to the stockroom from which the supplies are to be obtained. After checking to see that the stores charge is correctly filled in, the issuing stockkeeper signs his name in the space provided and stamps it with the symbol of the issuing stockroom. The original (and duplicate if prepared in triplicate) is forwarded to the supply officer accountable for the supplies issued; the duplicate (or triplicate) is retained by the stockkeeper.

d. Not in stock stores charge.—(1) When a stores charge is presented to a stockroom for material that is not in stock, all copies are stamped "Not in stock." The original is then forwarded to the accountable supply officer as a notification to replenish his stock. The other copy or copies are returned to the person originating the stores charge.

(2) When only a part of the material specified can be furnished by the stockkeeper, all copies are corrected to indicate the material furnished and the original marked "Balance not in stock." Original and duplicate (if prepared in triplicate) signed and stamped by the stockkeeper are then forwarded to the accountable supply officer and the other copy is retained by the stockkeeper.

39. Stores Credit (W. D., A. C. Form No. 82).—(See A. C. Circular 15-82.) *a. General.*—The stores credit (fig. 27) is used by all Army Air Forces activities to cover local receipts of expendable Army Air Force supplies that are reclaimed from damaged equipment, manufactured locally, previously issued on stores charge, etc.

b. Preparation and entries.—Form No. 82 is accomplished in the following manner:

(1) Opposite the word "Station" is entered the name of the station at which the supplies are received.

(2) Opposite the word "Organization" is entered the name of the organization or department from which the supplies are received.

(3) Opposite the heading "Account No." is entered the proper account and work order symbols. The account symbol is entered on

the line provided, and the work order symbol in the space immediately above. No stores credit may contain receipts to more than one work order or account. A space is also provided for entering the voucher number.

(4) Opposite the word "Date" is entered the date of the transaction.

(5) Under the respective headings are entered the quantity, unit, part number, and description (name) of each article. Entries under the heading "Total cost" are accomplished only at stations or in organizations maintaining cost offices. No entry is required under the heading "Unit cost."

(6) Opposite the heading "Received by," the signature of the receiving stock clerk is entered.

(7) Opposite the heading "Turned in by," the signature of the individual turning in the property to the stockroom is entered.

(8) Stores credits covering the receipt into stock of manufactured articles are stamped "Manufactured stock." Stores credits may not, however, be used to cover the receipt into stock of manufactured nonexpendable articles; in this case W. D., Q. M. C. Form No. 431 (Receiving Report) is used.

c. Number of copies and distribution.—At stations or in organizations maintaining cost offices, stores credits are prepared in triplicate, elsewhere in duplicate. All copies are turned in to the stockroom receiving the supplies. After checking to see that the stores credit is correctly filled in, the receiving stockkeeper signs his name in the space provided and stamps the form with the symbol of the receiving stockroom. The original (and duplicate if prepared in triplicate) is forwarded to the Air Forces supply officer, the duplicate (or triplicate) being retained by the stockkeeper.

40. Memorandum Receipt (W. D., A. C. Form No. 99).—(See A. C. Circular 15-99.) *a. General.*—The memorandum receipt (fig. 28) is used as a debit or credit receipt for issuing nonexpendable property to individuals or organizations by accountable officers.

b. Preparation.—The form is prepared in duplicate by the accountable officer and the original and duplicate given to the individual receiving the property, who signs the original and returns it to the issuing officer. The duplicate is retained by the individual receiving the property, for file.

c. Responsibility.—When property is issued on this form the signee becomes responsible for it, although the issuing officer retains accountability. Individuals receiving property on a memorandum receipt are not required to maintain stock record accounts as these are maintained by the accountable officer.

Original from
UNIVERSITY OF CALIFORNIA

WAR DEPARTMENT
AIR CORPS
Form No. 241
(Revised February 11, 1939)

INSTRUCTION SLIP

To Foreman, Wood Shop Date Oct. 25, 1941

Manufacture bench top as per attached drawing (See W. O. 41-10-80).

A. P. Clark,
Foreman, Metal Shop

U. S. GOVERNMENT PRINTING OFFICE 3-10331

FIGURE 29.—Instruction Slip (W. D., A. C. Form No. 241).

b. When a foreman in a depot or station engineering department requires work to be accomplished by personnel within the department who are not under his jurisdiction, he prepares the form in duplicate, describing the work and listing the work order number and the account symbol chargeable. The original is forwarded to the foreman who will accomplish the work, and the duplicate is filed with the issuing foreman's copy of the work order.

42. Bill of Material (W. D., A. C. Form No. 243).—(See A. C. Circular 15-243.) *a. Purpose.*—The bill of material (fig. 30) is used by depot and station engineering departments for listing the supplies and parts required for the manufacture of equipment, overhaul, or repair of aircraft and other equipment.

b. Preparation.—(1) The form should be prepared as soon as possible after the work order is approved, except when the requirements cannot be determined until the equipment is disassembled, in which case it is prepared during the process of disassembly. It may also be used at any time during the process of the work to list additional items, the need for which was not foreseen at the time of preparing the initial list. When the items required are known to be available for issue, the bill of material may be omitted and the items listed directly on Form No. 81.

(2) The form is prepared by personnel designated by the engineering officer. The originator fills in all data required in the heading, and lists under the column headings provided, the quantity, unit of issue, part number, if any, and names of all the items required, and signs the original. He then forwards both copies to the stockroom. The stockkeeper indicates with the symbol "V" on both copies, in the space provided, the items available for issue in his stockroom, and signs and dates the form. If all the items listed are not on hand, he forwards both copies to the supply office where action is taken to obtain the balance of the items. The estimated dates of delivery or such other remarks as are applicable are entered by the supply office on both copies in the space provided. The supply officer or his designated representative then signs and dates the original and returns both copies to the stockkeeper who forwards the original to the originator and retains the duplicate as a follow-up on the items to be received at a later date.

(3) Items listed on the bill of material may be issued immediately on stores charge prepared by the stockkeeper or obligated by tagging with Form No. 83 marked for the particular job. In the latter case, the items are withdrawn, as required, on stores charges prepared by the foreman.

43. Stores Exchange (W. D., A. C. Form No. 249).—(See A. C. Circular 15-249.) *a. General.*—The stores exchange (fig. 31) is used by stockkeepers when an article is turned in to stock in exchange for a similar serviceable article. In this way it serves as a notice to the supply officer to post the resultant changes in quantities in the stock records. The form is used only in the following cases and not for any transactions affecting the accountable balance:

(1) When a reparable article either expendable or nonexpendable is turned in for exchange (the term “reparable” in this case is not construed as “unserviceable”).

(2) When a condemned nonexpendable article is turned in for exchange. Since condemned expendable articles are not placed in stock, such transactions are not considered exchanges as contemplated above. Replacements for condemned expendable articles are issued on stores charge.

b. Preparation and entries.—The stores exchange is prepared and signed by the stockkeeper making the exchange, and no other signatures are necessary. When required, the certificate prescribed in AR 35-6540 is presented at the time of the exchange. At depots and stations maintaining cost offices the form is prepared in duplicate, elsewhere in original only, and separate forms are prepared for each work order or account.

(1) In the heading, the name of the depot or station at which the exchange is made, the date, the account symbol, and the work order number, if any, are entered.

(2) In the body of the form, the quantity, unit of issue, part number, if any, and the name of the articles exchanged are entered under the respective column headings. The condition of the articles turned in, as shown by the inspector's tag, is indicated in the column headed “Condition” by entering the letter “R” for reparable and “C” for condemned. Entries under the columns headed “Unit cost” and “Repair cost” are accomplished only at depots and stations maintaining cost offices.

(3) At the bottom of the form, the signature of the stockkeeper making the exchange, the initials of the person accomplishing the stock record posting, and the initials of the person abstracting the cost data are entered.

44. Inventory and Inspection Report (W. D., I. G. D. Form No. 1).—(See AR 20-35.) *a. Purpose.*—The inventory and inspection report (fig. 32) is used for the condemnation of property which has become unserviceable in the service due to fair wear and tear, or which has been declared obsolete and is no longer required for the service.

PAGE 1

Of Air Corps property. Pertaining to Chanute Field, Rantoul, Illinois.
(Class, QM, medical, etc.) (Station or organization)

Accountable officer JOHN E. DOE, Major, A. C. Inspected at Chanute Field, Rantoul, Illinois.

On August 5, 1941 By J. J. Niemand, Capt., Air Corps
(If special inspector, state authority and date)

[illegible]

1991

① Front.

FIGURE 32.—Inventory and Inspection Report (W. D., I. G. D. Form No. 1).

INSTRUCTIONS

1. This form will be used for the inventory and inspection of property (except public animals) for condemnation in all the branches of the Army. Reports to be submitted in duplicate.

2. Separate inventories will be prepared for property pertaining to the different supply branches, for "Subsistence Stores" as distinct from other property of the Q. M. Corps, for property not listed as controlled, for property listed as controlled, for public buildings, and for vessels or boats of the Army.

3. For regulations relating to the inspection of property for condemnation, including the preparation, approval, and disposition of I. & I. Reports, see A. R. 20-25. Special attention is invited to the following paragraphs thereof:

Par. 1a (5): Articles identified by serial numbers will be listed singly, giving serial number, arsenal or other initial, date of issue, and length of time they have been in the service, together with such other special information peculiar to the article as may be required. These data may be given in column 1, using more than one line if necessary, or on a list attached to the I. & I. Report.

Par. 1a: Erasures of entries on I. & I. Reports are prohibited. Changes in entries must be authenticated by the initials of the inspector. Blank lines, column 1, will be ruled out in red ink when no articles are entered thereon.

Par. 2d: Cost price of the property if not of record will be estimated. Par. 65 (6): Marking "I. C." etc., at time of inspection of articles to be turned in to salvage. Salvage officers must receipt on the I. & I. Report for such property turned in.

Par. 65 (8): Marking or mutilation at time of inspection of articles "to be turned in for reclamation of component parts." Reclamation officer must receipt on the I. & I. Report for such articles turned in.

Par. 7: Witness to the destruction of property.

Par. 8: Disposition of I. & I. Reports.

4. When all the articles inventoried are not presented to the inspector, the number or quantity not presented should be carried in the column "to be continued in service."

I CERTIFY that the articles "to be destroyed" on this I. & I. Report have been destroyed in my presence.

Par. 7, AR 20-25

Chanute Field, Rantoul, Ill. Aug. 7, 1941

Received the articles "to be turned in for reclamation of component parts" on this I. & I. Report.

F. A. Blank
Major, A. C.

Reclamation Officer.

Par. 65 (8), AR 20-25

Received the articles "to be turned in to salvage" on this I. & I. Report.

Salvage Officer.

Par. 65 (6), AR 20-25

WD, IGD, Form No. 1
Auth. Pub. 9, 1939
(Revised Nov. 14, 1939)

70-12820
U. S. GOVERNMENT PRINTING OFFICE

Chanute Field, Rantoul, Ill. Aug. 6, 1942

I CERTIFY that this inventory, consisting of 1 sheets, is correct in every particular; that each article enumerated has been examined by me personally, has never been previously condemned, and is, in my opinion, unserviceable or unsuitable for further public use here, and requires the action of an Inspector.

John H. Hancock
Captain, Air Corps
Sub-Depot Supply Officer
Responsible Officer.

I CERTIFY that I have carefully examined the articles enumerated within, and that the disposition recommended is, in my judgment, the best for the public interest.

J. H. Niemand
Capt., A. C.,
Inspector.

Hq. Chanute Field, Ill. 7-6-41

For action of Department or Corps Area Commander.
(Par. 4, AR 20-25)

Approved:

By command of

For action of Chief of Supply Branch.

For action of the Secretary of War.

② Back.

FIGURE 32.—Inventory and Inspection Report (W. D., I. G. D. Form No. 1)—Continued.

b. Division of property.—In general, property is divided into two classes: supervised and nonsupervised articles. Supervised articles, the final disposition of which are supervised by the chief of the supply arm or service concerned, are designated as such by the chiefs of the supply arms or services in supply catalogs or similar publications approved by the Secretary of War. Articles which are not thus supervised are disposed of as nonsupervised articles.

c. Preparation.—(1) The responsible officer prepares and signs two copies of this report listing the property to be inspected. Directly under the title is typed or printed the additional words: "These articles are not listed as supervised," or "These articles are listed as supervised," as the case may be.

(2) In the event articles are listed by supply arms as supervised, the responsible officer, where policies require such action, submits a list of the property through channels to the corps area, depot, or arsenal commander, requesting instructions as to the disposition or authority for submitting the property for the action of an inspector.

(3) Separate inventory and inspection reports are prepared for—

(a) Property pertaining to different supply arms or services.

(b) Property which is not listed as supervised.

(c) Property which is listed as supervised.

(4) Articles identified by a serial number are listed singly, giving the serial number, date of issue to the organization, and the period of time the articles have been in service.

(5) Erasures of entries on reports are prohibited. Changes in entries are authenticated by the initials of the inspector.

(6) If not of record, the cost price is estimated and the word "Estimated" is written above the stated price.

(7) If the property to be inspected has been acted upon by a survey officer, a copy of the report of survey accompanies the inventory and inspection report.

(8) Blank lines in column 1 of the report are ruled out in red ink when no articles are entered thereon.

d. Property dropped from accountability.—An approved inventory and inspection report is a valid voucher on which to drop property from accountability.

e. Inspection.—Property is arranged for inspection in the order of enumeration on the report and every article is examined by the inspector. The responsible officer accompanies the inspector and should be prepared to give all necessary information in regard to the property.

f. Disposition of report.—(1) The action of the inspector is final unless he recommends that the property be turned in to a depot or

arsenal, in which case the report is forwarded to the corps area commander for final action. In the event articles are not listed as supervised, the original report is delivered by the inspector to the accountable officer for use as a property voucher. The duplicate is forwarded by the inspector to the corps area commander for his information and file.

(2) In the case of articles listed as supervised, both copies are forwarded through channels to the corps area commander who notes his action thereon and forwards both copies to the chief of the supply arm or service to which the property pertains. The latter endorses his approval, or other action, on both copies and transmits them to the Chief of Finance for final action.

45. Report of Survey (W. D., A. G. O. Form No. 15).—*a. Purpose.*—Officers and other persons responsible for public property are charged for any loss or destruction of, or damage to this property, and the monetary value thereof is deducted from their pay unless they are relieved from responsibility for the loss, destruction, or damage by an approved report of survey (fig. 33 ① and ②) or in some other manner in accordance with regulations.

(1) If any article of public property is lost or damaged through the fault or neglect of any officer or enlisted man, he is required to pay the value thereof as shown in current price lists if indicated therein, otherwise at the invoice price, or the cost of repairs, provided that when in the judgment of the commanding officer credit should be allowed for depreciation in the value of the property at the time of loss or damage, the allowable credit will be determined by a report of survey.

(2) If articles of public property are embezzled, lost, or damaged through neglect, by a civilian employee, the value of the property or the amount of the damage thereto, determined by a survey if necessary, is charged to him and deducted from any pay or money due him. The principle of allowable credit on account of depreciated value is also applicable in proper cases to loss or damage of public property through the fault or neglect of organization, institutions, and other agencies or individuals.

b. Survey required.—When public property is lost, destroyed, or damaged, except by fair wear and tear in the service, a survey is required to determine the responsibility therefor and to recommend the disposition of the property damaged. The following examples are within the scope of these regulations:

(1) Property of a value greater than \$20 lost, destroyed, or damaged in transit, when responsibility for the loss, destruction, or damage

REPORT OF SURVEY

Air Corps Property Air Corps Supply Officer, Chanute Field, Bantoul, Ill.
(Class of property, ordnance, medical, etc.) (Stock record account and station)
 Accountable officer I. W. Blank, 1st Lt., Air Corps Date March 28, 1941

STOCK NO.	ARTICLES	QUANTITY	TOTAL COST	DISPOSITION		
				DESTROY	SALVAGE	OTHER
	Airplane, Curtiss, Type P-36A Air Corps No. 36-166	1	\$12,620.00			Re.
	Engine, Pratt & Whitney, Type R1830-13, Air Corps No. 3940	1	6,500.00			Re.
		Grand total	\$19,120.00			

DATE AND CIRCUMSTANCES

The airplane and engine listed hereon were completely wrecked when the airplane struck an excavation hole in the flying field during a landing at Chanute Field, Ill. on March 28, 1941. The airplane was being flown by John J. Jones, 1st Lt., A. C. on Chanute Field Operations Order No. 102. Exhibits A to C attached.

AFFIDAVIT I do solemnly swear (or affirm) that the articles of public property shown above and/or on attached sheets were lost, destroyed, damaged, or worn out in the manner stated, while in the public service. <i>David L. Clark</i> <u>David L. Clark, Major, A. C.</u> <u>Eng. Off. 25th Sch. Sqdn.</u> (Grade and organization) Subscribed and sworn to (or affirmed) before me at <u>Chanute Field, Ill.</u> this <u>1st</u> day of <u>April</u>, 19<u>41</u> <i>D. S. Campbell</i> <u>D. S. Campbell</u> <u>1st Lt. Inf. Summary Court</u> (Grade and organization or title; if notary public, add seal)	CERTIFICATE I certify that the loss, destruction, damage, or unserviceability of the articles of public property shown above, and/or on attached sheets, was caused in the manner stated and without fault or neglect on my part, and that each article listed with a view to elimination by destruction has been examined by me personally, has never been previously condemned, and is, in my opinion, worthless for further public use. _____ (Signature) _____ (Grade and org., accountable or responsible officer) Hq. <u>Chanute Field, Ill.</u> Station <u>Bantoul, Illinois</u> Date <u>April 15, 1941</u> To <u>Major H. E. Mann, A. C.</u> <u>Chanute Field, Ill.</u> who is appointed surveying officer. By order of <u>Colonel Pierce</u> <i>D. S. Campbell</i> <u>D. S. Campbell</u> <u>1st Lt. Inf., Asst. Engineer</u>	(7) Property Voucher No. _____
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W. D., A. G. O. Form No. 15
July 14, 1938

2-10488

① Front.

FIGURE 33.—Report of Survey (W. D., A. G. O. Form No. 15).

FINDINGS.—I have examined all available evidence as shown in exhibits A to G and as indicated below have personally investigated the same and it is my belief that the articles listed hereon and/or on attached sheets, total cost \$19,120.00 (Nineteen thousand one hundred twenty) was damaged as a result of the airplane striking a hole in the flying field while landing at Chanute Field, Rantoul, Illinois, on March 28, 1941. It was being operated on a duly authorized flight. The damage resulted from no fault or neglect of any person.

RECOMMENDATIONS.—It is recommended that the property, total value \$19,120.00 (nineteen thousand one hundred twenty dollars) be dropped from the property records; that the responsible and accountable officers be relieved of responsibility and accountability; that this property be disposed of in accordance with the provisions of Air Corps Circular 65-12. Chanute Field, Rantoul, Ill.

May 1, 1941.

H. E. Mann
H. E. Mann,
Major, A. C.,
Surveying Officer.

I have witnessed the destruction of the articles to be destroyed and/or received the articles to be turned in to salvage.

Date

(Officer witnessing destruction, or salvage officer)

(⁹)
Hq. Chanute Field
Station Rantoul, Illinois
Date May 31, 1941

(¹⁰)

(¹¹)

APPROVED: Any damaged property shown above and/or on attached sheets has been inspected by me, or by a disinterested officer of suitable grade and arm or service, and the disposal indicated is in the best interests of the public service.

A. T. Pierce

Colonel, A. C., Commanding

(Appointing authority)

Hq.
Reviewed for corps area commander

Date

Number

(Finance officer.)

Corps Area File No. 1987

Reviewed for the Commanding General, 6th Corps Area, in accordance with Par. 11-b(1) AR35-6640.

H. R. Davis
June 1, 1941
H. R. Davis

Asst. Finance Officer.

¹ If space is inadequate, list articles on suitably ruled and captioned attached sheets and recapitulate in this and Total Cost column as "Sheet 1, \$147.00"; "Sheet 2, \$254.30," etc.

² Estimate cost if not known.

³ When disposition of articles is involved, the surveying officer will indicate same to proper column using abbreviated entries as follows: D—to be destroyed; S—to be turned in for salvage; V—to be sold; R—to be turned in for reclamation of component parts; C—to be continued in service; R—to be repaired; Ex—to be held for exchange.

⁴ The grand total cost of all articles acted upon will always be shown.

⁵ Enter a concise statement of date and circumstances together with a reference to certificates and affidavits submitted, as "Exhibits A to H herewith." Each exhibit will bear a reference to the report of survey to which it pertains as, "Ex. A"—R/S 3/4/34—\$75.00."

⁶ The certificate may be omitted if the oath is subscribed to by the accountable or responsible officer. In any event the oath must be subscribed to.

⁷ For use of chief of arm or service or Secretary of War or both.

⁸ Enter total cost as shown on the face of the report and continue with the findings in full. If any oral testimony is considered, the name of each witness and a clear, concise statement of the testimony given will appear in the findings. Opposite a caption "RECOMMENDATIONS", which should follow the findings without loss of space, enter appropriate recommendations. The recommendations should be complete in all details and cover all articles or subjects investigated. If space is insufficient, continue on additional sheets; the station, date, and signature to follow the recommendations in any case.

⁹ Should the appointing authority disapprove the recommendations of the surveying officer, the disapproval with reasons or action recommended will be typed on the back of the report or on an attached sheet and reference made thereto in this space.

¹⁰ For action or review of division, post, camp, or station commander if surveying officer is appointed by a subordinate administrative commander.

¹¹ For use of corps area commander.

is not accepted by the shipping officer, through the medium of an over, short, and damaged report, or by the carrier.

(2) Property of a value greater than \$50 which is ordered to be abandoned.

(3) Property lost, destroyed, or damaged through the fault or neglect of an officer, or enlisted man, or civilian and for which he declines to accept a charge against his pay.

(4) Property found to be short or damaged upon transfer of accountability from one individual to another, when controversy arises as to the liability for such shortage or damage.

(5) When property is damaged, destroyed, or unaccounted for while in the possession of a contractor or firm who declines to make payment therefor, except where the amount due may be determined and collection affected under terms of the contract.

(6) When a survey is directed by the commanding officer or higher authority.

(7) Wrecked aeronautical equipment.

(8) When the value of property short, damaged, or otherwise unserviceable exceeds \$50 or when in the judgment of the commanding officer all concerned should not be relieved from responsibility.

c. Action by surveying officer not required.—Action by a surveying officer is not required on a report of survey in the following instances:

(1) When the value of property ordered to be abandoned is not greater than \$50.

(2) When the value of the property short or damaged does not exceed \$50 and the commanding officer approves a report to relieve all concerned. At depots and arsenals this limitation is waived.

d. Preparation.—(1) When loss or destruction of, or damage to, public property occurs, requiring the action of a surveying officer, such action is requested by the responsible officer as soon as practicable and in all cases within 30 days after discovery of the loss, destruction, or damage, unless exceptional circumstances, which will be explained by the officer's certificate, prevent such action within the prescribed period.

(2) An officer instituting a survey prepares and forwards to the commanding officer, W. D., A. G. O. Form No. 15, in triplicate. To the original copy of the report of survey are attached all pertinent papers upon which the interested officer relies to be relieved from responsibility, such as over, short, and damaged reports, bills of lading, certificates, and affidavits; and in cases of accidental damage to Government property there is attached a copy of the approved

report of the investigating officer or proceedings of a board, if any, or other available report bearing on the accident which resulted in the damage. No copies of the supporting evidence are required to be attached to the duplicate and triplicate copies of the report of survey.

(3) Separate reports of survey are prepared for property pertaining to different supply arms and services.

(4) The monetary total on each sheet, in the column headed "Value," is initialed by the responsible officer. No other monetary totals are initialed.

(5) Erasures, interlineations, and other alterations in the written matter of a report of survey are initialed by the officer responsible for such.

(6) When a report of survey covers damaged or unserviceable property not exceeding \$50 in value and in the opinion of the responsible officer all concerned should be relieved from responsibility, he includes in the statement of date and circumstances on the form, a recommendation for disposition of the property. At depots and arsenals the \$50 limitation is waived.

e. Examples.—Examples of a typical certificate and affidavit suitable for exhibits to a survey are as follows:

CERTIFICATE

4-3-41

I hereby certify that on April 1, 1941, I was ferrying Harry Green, 1st Lieut., A. C., from Chanute Field, Illinois to Scott Field, Illinois in a BT-2B airplane, No. 32-26, on Chanute Field Operations Order No. 21, and while flying at an altitude of 5,000 feet over rough terrain in the vicinity of Effingham, Illinois, the engine suddenly stopped. I attempted to land in an apparently open field but upon nearing the field, I noted that it was littered with rocks and stumps. I therefore changed my course in order to land in an adjoining field. In turning, the airplane stalled and spun into rough terrain, completely wrecking it.

JOHN DOE,
1st Lieut., A. C.

Exhibit A—R/S, 4/5/41—\$15,290.25.

STATE OF ILLINOIS
COUNTY OF CHAMPAIGN } ss.
CHANUTE FIELD

AFFIDAVIT

11-14-41

PERSONALLY APPEARED BEFORE ME, THE UNDERSIGNED AUTHORITY FOR THE ADMINISTERING OF OATHS, ONE Thomas E. Turner, Sergeant, A. C., Serial No. 906704, 48th Pursuit Squadron, Chanute Field, Illinois, WHO FIRST BEING DULY SWORN, DEPOSES AND SAYS:

That he was on duty in the Engineering Dept., Chanute Field, Ill., as a mechanic in the airplane repair shop from July 1, 1940 to November 14, 1941; that the articles of Government property listed below were issued to him by the Air Corps supply officer, Chanute Field, Ill., for his use in connection with shop work; that these articles, among numerous other articles, were used by mechanics in his charge; that upon inventory on November 4, 1941, he found

these articles to be missing; that a diligent search and inquiry has failed to locate these articles; that every precaution was taken to safeguard the loss of property by lockers, etc., which are securely locked, except during working hours.

- 1 ea Caliper, micrometer, outside, ball point, tubing, ratchet stop, 0 to $\frac{1}{2}$ inch.
- 1 ea Gage, thickness, 22-leaf, 0.004 to 0.025 inch.
- 1 ea Gage, screw pitch, V-form, 6-60 thread.

FURTHER DEPONENT SAYETH NOT.

Thomas E. Turner, 906704,
Sgt. 48th Pursuit Sqd.

SWORN TO BEFORE ME, AND SUBSCRIBED IN MY PRESENCE, THIS 15TH DAY OF
NOVEMBER 1941.

ROBERT W. THORP,
*Captain, A. C.,
Adjutant.*

Exhibit A—R/S, 11/13/41—\$8.00.

[A. G. 062.11 (4-16-42).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

DISTRIBUTION:

Bn and H 1 (6); C 1 (3).
(For explanation of symbols see FM 21-6.)

